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Important Income Tax Changes

Many Favorable Changes in the New Law

By W. B. SWINDELL
M. P. Snow and Company, Chicago

THERE are very few corporations or other tax payers who will realize how important the new 1928 Tax Law is until they actually come to prepare their tax reports.

Changes have been made which materially affect the income of thousands of corporations, partnerships and individuals.

Corporations come in for the biggest direct benefit.

Effective Date—The new act takes effect, insofar as the filing of returns for 1928 is concerned, January 1st, 1928. That is, portions relating to the income tax, with the exception of the administrative provisions, are in general effective as of January 1st, 1928. There are different effective dates in connection with certain other provisions such as, for example, the repeal of the automobile tax, the admissions and dues tax, etc. In general it may be said, however, that the law is effective as regards transactions occurring on or after January 1st, 1928.

Increased Credit Benefits Corporations—Instead of there being a $2,000 credit, in the new act there is a $3,000 one. It is allowed to all domestic corporations whose net incomes do not exceed $25,000. Where the net income is slightly over $25,000, but not over $25,360, the tax is computed by using the credit as though the net income did not exceed $25,000.

Corporation Rate Decreased—The greatest advantage occurring to corporations out of the new Income Tax Law is the reduction in rates from 13½ per cent to 12 per cent. The saving to corporations by this change alone will run somewhere between one hundred and one hundred fifty million dollars this year. It has the greatest value of any change made in the income tax law for some years so far as corporations are concerned. For example, every corporation will save $1.50 in taxes on each $100 of income. A corporation which has $10,000 net income, under the old rate, would be subject to a tax of $1,350; under the new law it would pay a tax of only $1,200, or a saving of $150. A corporation with $50,000 net income would save a total of $750.

Extension for Payment of Deficiencies—Where a company owes the government money and finds it difficult to pay the amount which is demanded, there is a special provision in the new 1928 act which is of help to it. In former years, in exceptional cases where the payment of a deficiency would work an undue hardship on a taxpayer, the Commissioner of Internal Revenue was permitted to grant an extension of twelve months time for payment of the amount due. Under this new act, the Commissioner may grant a further extension of twelve months for the payment of such a deficiency. There is much to be said in favor of this provision. Additional income tax assessments most frequently are unexpected and it is important to have sufficient time in which to meet such claims of the government.

Time Shortened for Assessment and Refund—The Government, under the new act, has less time in which to assess tax against you as a taxpayer; however, you also have a shorter period in which to file claims for refund. Under this new act, the Government is limited to two years after the return was filed in making its assessment. No proceeding in court for the collection of any tax assessed under the 1928 law may be begun, unless such assessment is made within the two years specified by law.

Likewise any claim for the refund of taxes assessed under the 1928 law must be made within two years from the time the tax is paid.

Waivers—In the past it has been considered a good thing by taxpayers to sign a waiver in order

to avoid an immediate assessment or suit for collection by Uncle Sam. After all, such a waiver is only a mutual agreement in writing between the taxpayer and the Commissioner for the extension of the statute of limitations, which would otherwise apply. Now, under the 1928 law, these agreements must be made within the two years after the return was filed. A waiver may be extended by a mutual agreement in writing between the taxpayer and the commissioner, if the agreement is made before the extension of time previously agreed upon.

Request for Prompt Assessments—Unexpected additional tax assessments have in the past been one of the most important and dreaded liabilities of taxpayers. Under the new revenue law, a request for prompt assessment may be made by a corporation in the following cases:

Where dissolution is contemplated within a year from the time the request is filed;

Where dissolution is in good faith actually begun before the expiration of such year; and

Where dissolution is completed at the time of filing the request for prompt assessment.

In the case of income received by a decedent during his lifetime, or by his estate during the period of administration, a request for prompt assessment may also be made in writing.

In all cases covered by this provision, the assessment, or any proceeding in court for the collection of income taxes, will be begun in one year after such request is made by the taxpayer.

Installment Sales—Those who sell realty, and those who make casual sales or other casual dispositions of property, will be interested to learn that they will be permitted to report on the installment basis if the initial payments do not exceed 40 per cent of the selling price, instead of 25 per cent, as under the previous law and regulations.

Earned Income Credit—Individuals will be interested in the fact that an increase has been made in the earned income credit maximum from $20,000 to $30,000. In other words, an individual's income which comes under the heading of what the Government calls "earned" is entitled to a maximum credit of $30,000 of such income.

General—Aside from the changes made by the Revenue Act of 1928, there have also been made a number of important rulings and decisions. It is advisable to consider these findings in deciding on any question about which you may be in doubt. I particularly recommend that you consider the decisions of the United States Board of Tax Appeals. These rulings have thrown a great deal of light on mooted questions.

Salaries—In the past year, a number of cases have come up where the Government contended that officers of corporations were paid excessive salaries. As this is something which affects every corporation I will say a word about it here. It is my opinion that no one can determine so well as the corporation officers and directors themselves what the officers are worth to the corporation. The Government imposes certain requirements on salaries in order for those salaries to be deductible. It states that salaries must be reasonable, for service actually rendered, and must not be based on stock holdings. I believe that any salary deduction which is within the bounds of reason will not be thrown out by the Government.

Depreciation—Depreciation is another deduction that comes up every year. The important thing to remember is that the rates used must be, as the salary deductions are, "reasonable". In my opinion, it may be said further that no one can tell as well about depreciation as the people who own, operate, maintain and supervise the properties on which depreciation is claimed.

A point in this connection is that a decision has been made by the U. S. Board of Tax Appeals which permits a taxpayer to deduct the unextinguished or undepreciated cost of a replaced part less, of course, any salvage value.

How to Be a Failure

THERE are so many "success stories" going the rounds just now that it seems to us a few instructions on "how to be a failure" would not be amiss. Just adhere to the following instructions and there will be little doubt as to your ultimate end.

Don't advertise. Advertising is the bunk and should be forgotten. Let your competitor throw away his profits if he wants to—but you keep yours. Particularly should advertising be thrown overboard when business is a little slack.

Put your prices high, but forget about quality. Perhaps some of your customers will object to this, but you should worry. There are lots more.

Be surly. This rule should apply to both employees and customers. It is a mark of manliness to show everyone that you are afraid of no one. Bawl your employees out in public and whenever possible be discourteous to customers. Then everyone will say: "Isn't he a whiz!"

Give credit to anyone asking for it. And don't be in a hurry for the money. Your customers need it just as badly as you do.

Don't go to conventions. What's the use of sitting around a stuffy hotel, listening to a bunch of windbags? Besides, it costs money.

Never exhibit your product. These machinery exhibits and shows are getting too thick. Nobody attends them anyway except the exhibitors, and you can't sell to your competitor. Why pay a lot of money just to see a lot of people walk by a booth?

Never take inventory. You have a pretty fair idea how you stand anyway. Why go to all that bother?

Cost Accounting in the Paper Industry

Part III—Laying Out the Cost System—The Cost Survey

By D. A. WILCOX
Oxford Paper Company, New York, N. Y.

IF WE are to get the best out of a cost system, it is essential that it be designed to fit the particular requirements of the organization. While it is true that there are general points of agreement between all plants in the same industry and to that extent a uniform system is applicable, still each company presents its own special problems and in selecting and designing a system these should be studied and given special consideration. It is a mistake to suppose that a system that operates well in one company can be lifted bodily and imposed on another with equally satisfactory results. It is important to subject the organization as a whole to a careful analysis in order that the most pertinent information may be developed and that time may not be wasted on the collection of irrevelant data.

It is safe to say that any cost system will pay dividends in proportion to the amount of preliminary work plowed in. The system should be of value, not merely as a means of developing information, but also of bringing about a psychological condition whereby the members of the force will not only use the data, but will be thinking about their jobs and considering what it is that they would like to know. This brings about an inquiring state of mind and of itself unearths a great deal of material that might otherwise lie hidden. If the force will once admit that there is a chance that there may be something worth investigating, it is not long before they start digging at it and often many surprising things are brought to light. Hence in the early stages of starting a cost system, the greater the cooperation of all who can be secured in presenting their special problems and what it is that they would like to know, the better will be the resulting plan and the more it will be utilized. A "ready-made" system could be installed by a competent accountant which would no doubt yield beneficial results, but it would never be equal to a "custom-built" job in which all concerned have had a hand in the design.

Selecting the Type of Cost System

The first things to be considered are type of product and size and nature of the organization, this for the purpose of determining whether it would be best to use a simple "Actual cost system," or a standard cost system. In the first instance we merely proceed to collect all the actual expenses and divide by the production to get the cost, whereas in the latter we set up a budget of expenses and productions and charge the product at a set rate per unit of production regardless of actual expenses. The former is limited in its use to the few cases of a small single product mill (such as a single pulp mill) and the few cases where it is impracticable to develop standards such as in the case of woods operations.

If the mill is devoted to making a single product and is relatively small so that the manager can have a very intimate knowledge of all that goes on, then, because of its simplicity, an actual cost system may be used to advantage. All that is required here is to divide the plant up into its natural divisions; in the case of a sulphite mill, the wood room, digesters, bleaching, machine room and steam plant, and divide the expenses into their customary divisions such as labor, repairs, supplies, etc., and then set standards for each division of expense for each department and compare the actual with them. The cost per unit of the product may be considered to be the total of the actual expenses over a sufficiently long period of time (not less than a month) divided by the production for the same period. The comparison between the actual and estimated expenses set forth in this manner, **combined with an intimate knowledge of current conditions**, will probably give the management a sufficient control. If this is so, then a more complicated and necessarily more expensive system would be an unjustifiable expense. While in a case of this kind the use of such a system should not be disregarded, its grave dangers ought to be recognized. In general there are two such dangers, the first that the company may gradually expand beyond the point where such a system is sufficient and the increase be so gradual as to be imperceptible from day to day and the fact not be realized until too late. The second danger is that a company with such a system is apt to become a "one-man" company in which the manager keeps the business "under his hat" and if anything should happen to him it would be very difficult for his successor to "carry on."

In all cases where more than one product is made, or in which there are more than one variation of the product, or in which the business is seasonable or subject to considerable fluctuations in volume, a standard cost system is indicated. The method of handling expenses in all such cases is uniform and has been described with a wealth of detail by Charles Wm. Gould, Jr., in THE PAPER INDUSTRY in the issues from August, 1926, to May, 1927, and reference is made here to those articles. However, for the benefit of those who do not have the articles at hand a brief summary of the system will be given later. When it comes to getting the costs of the

individual products, however, as well as the methods of charging for materials used and the like, there is apt to be a great deal of variation and just which method is most useful for a particular plant is the question which shall be considered now.

The Job Order Cost System

The first method, known as the job order cost system, has been already mentioned; it is simply a question of applying to each particular job the actual materials and times of operations applied to it. The method is easier to handle where there are a few large orders to follow than when there are a multitude of orders. In the latter case the work involved may easily mount up much more rapidly than the accruing benefits. In fact, as the number of orders increase, the value is apt to decline rapidly and the results, far from being the most accurate, become erratic and inaccurate. The reason for this is that in the manufacture of paper there are many conditions prevailing that affect the time taken for each operation aside from the size of the order, such as the type of the paper itself, which is what we want to know, and also general or "local" conditions which affect all lots made that day alike, such as strength of the pulps, steam pressure, etc. It may easily be, and very often is, that these local conditions have far more effect on the operating time than the type of paper itself, with the result that variations in the cost of two types of paper may not be caused by difference in the types themselves, but by entirely extraneous factors. It means that the same type of paper will have vastly different costs at different times owing to entirely accidental causes which render very difficult any attempt to set relative prices. If, however, the lots are quite large and cover considerable periods of time to make, these local conditions tend to average out and the true difference due to type will appear. Thus as the number of orders increase and their sizes decrease the job order system not only becomes more burdensome and unsatisfactory, but untrustworthy.

The Predetermined Cost System

The other major method is what is known as the "Predetermined Cost System." In this case, as previously explained, an estimated cost is set up for each type of paper based on careful studies and this cost is considered to be the cost of paper. It has the advantage of being much more easy to handle where there are a great variety of types made and of giving very useful data as regards efficiencies and related points. The great drawback to it is that the estimates cannot usually be made as scientifically as might be desired and, in order to make it practical, types have to be grouped, sometimes to such an extent as to cause inaccuracies in the cost of an individual lot. However, when the number of orders reach a certain point it becomes more accurate than the job order system and, because of the lesser amount of work involved, is the most practical one to use. It may also be indicated in certain cases even when only a few large orders are made because of the special information that it may yield concerning the efficiency of the operations.

A Cost Survey

The first step in considering a cost system, then, is to make a general survey of the whole situation. As a preliminary this should include a study of the character of the business itself as follows:

Products: One product mills.
Is product absolutely uniform?
Does it all go through the same identical operations?
Multiproduct mills.

Character of the business: Is it seasonable?
Does it fluctuate materially in volume?
Is it a contract business with few large orders?
Is it a specialty mill with a large number of orders?
Which is more important:
(a) Knowledge of costs on which to set sales policies, or
(b) Reduction of costs to meet definite contract prices.

Organizations: An organization chart should be made showing the different departments of the business. This should be extended through the plant to show the important departments and the persons responsible for each. A flow chart should also be made for the plant showing the progress of the product from the first raw material through to the finished article. Such a chart need not be in great detail, but should show all important steps. It will be found useful in laying out the various departments into which the mill should be divided for cost purposes.

The principle features of any standard cost system as regards expenses may be stated as follows:

Burden Centers—The mill is divided into operating departments, or as they are termed "Burden Centers." A typical layout of a complete book mill making its own pulps would be as follows:

Center Number	Title	Center Number	Title
1	Coal storage	30	Calenders
2	Supply room	31	Rewinders
5	Wood yard	32	Cutters
8	Wood mill	33	Finishers
10	Soda mill	34	Finished paper storeroom
11	Sulphite mill	35	Shipping
15	Bleach plant	40	Repair department
20	Beaters	45	Steam plant
21	Paper machine No. 1	46	Electrical power
22	Paper machine No. 2		

50 Laboratory
51 Trucking
52 General Office
60 General manufacturing burden.

Note the blank spaces between the numbers. These are left to provide for future expansion and to add additional departments in their proper positions without renumbering all the centers.

In the example given we have some large centers covering a multiplicity of operations and machines, such as the soda mill, and some covering only one specific machine, such as the paper machine. The degree to which this subdivision should go is an individual study in which the needs of each mill must be considered. For instance, in the case of the soda mill, if the present mill is of modern design so that changes in the various divisions are unlikely in the near future it can be considered as one unit, but if changes in digesting, washing, bleaching, etc., are contemplated or there is any special reason to watch the expenses of any of them individually it may be advisable to subdivide it into two or more centers. Remember that it is easier to expand than to simplify the system, so the effort should be made to keep the number of centers down to that absolutely necessary to get the control required. The important thing to keep in mind with a complex center is that when changes are contemplated the cost system should be revised in sufficient time to give comparative figures as to the old and the new methods.

Parenthetically it might be noted that one of the most difficult and most important functions of the cost department is to maintain complete liason with all departments of the business so that it can be ready to supply data when required. It should be able to anticipate demands upon it, but to do this it must be in a position to know what is going on. For this reason the cost accountant should be taken into the councils of the elect, for just so far as he is relegated to the position of a clerk, just so far will be the results of his work. If he works in the light he can do astonishing things, but if he is forced to work "in the dark, darkly" the results will be largely—merely clerical.

The second step in our cost survey is to take the flow sheet of the mill and determine from it just what centers we shall require and how they should be arranged. As a general rule each distinct operation on the product should be a center and should not include two or more operations affecting different products differently. For example, the calenders and rewinders should be separate centers and not combined, whereas in the case of the soda mill there are quite a number of different operations, but all the soda pulp goes through them without any difference between the lots. The general arrangement of the centers is to place them in the order in which they would appear on the flow sheet; namely, the receipt and care of raw materials first, then the wood treatment, pulp manufacture, beaters, machines and finally finishing operations and shipping. The service and redistributed centers such as the repair department, steam plant, general manufacturing burden and the like are usually placed at the end. This arrangement is unimportant except as it is useful to follow out a logical plan.

Analyzing the Burden Centers

Having determined on our centers and their order we should make a careful detailed analysis of each one to determine its scope, its particular problems and the like so that our system may be set up in such a way as to be of the greatest use for each. A useful form for accomplishing this in which the beaters are analyzed, is given as follows:

Form No. 1—The X. Y. Z. Paper Company

Burden Center No. 20—Beaters

Function—To mix the pulps and raw materials for the paper and prepare them for the machines.

Description of the process—Beater man receives a card showing him the amounts of each material to put in each beater. Slush pulp is run in first, then dry pulps are added, followed by clay and size and finally alum and dyes. Beater is allowed to run for about four hours during the first part of which, and while the slush pulp is being added, the cylinders are lowered into the furnish drawing off part of the water until the furnish becomes of the proper consistence. After the furnish is properly beaten it is dumped into the beater chests from which it is drawn off to the jordans and thence into the machine chests until used on the machines.

Scope of the center—Includes the beaters, jordans, color room, preparation of size and clay and alum.

Principle equipment—(Note widths, speeds, capacity and productive capacity of the important units.)

Eight beaters, 1,800-lb. capacity.
Two jordans.
Two clay tanks, 2-ton capacity.
Two size tanks, 1,600-lb. capacity.

Normal operating units—(Hours per day, shifts, etc.)

Beater and jordans three shifts of 8 hours each.
Size and clay, one shift of twelve hours.

Special conditions prevailing—All pulps measured in fairly accurately. Beater chests have sewer connection for washing out residue of colors, etc.

Methods of measurement—Slush pulp measured in by tank measuring system. Dry pulps measured in by bales, each bale presumed to weigh a definite amount. Clay measured in by inches in clay box. Alum measured in by pails of solution. Dye weighed in.

Possibility of losses—Some fiber may be lost through concentrating cylinder. Beater chest connections with sewer offer a possibility of loss through carelessness in not draining as much as possible before washing. Measurements may be inaccurate, allowing the use of excess amounts of high priced pulps.

Cost problems involved—Method of charging furnish to orders.

Method of accounting for loss of stock in beaters.

Method of charging beater conversion costs to orders.

In making such a survey it is well to have several copies of Form No. 1 prepared on a hectograph or similar device and to be sure to fill one out completely for each center. Even in cases where this is already a well developed cost system such a survey may be of great value in suggesting both to the cost department and to others sources of possible losses and special points to be watched. After the prime use of the survey has passed, these forms filed with the cost department will often prove of great value as a source of reference concerning the plant, its equipment and other things.

Accounting Control

The objects to be secured in a cost system and for which we must provide are as follows:

1—To secure the costs of the different products, so as to enable us to establish selling policies and determine the relative profitableness of different lines.

2—To determine the efficiency of operations. This includes a control over expenses, a reduction of losses and efficient production by the various units and in the use of labor and materials.

3—To aid in evaluating inventories.

While the cost system so far considered has been primarily one dealing with the factory, a complete system of accounting control is necessarily of much greater scope and includes all phases of the business that contribute to the making of a profit or a loss. Thus sales and selling expenses, administrative expense, matters of production and distribution, purchasing and the like all enter into it. Some of the data, especially that pertaining to the production and cost of distribution, comes from the "Cost System"; parts from the general books and parts from other sources, but all must eventually be welded together in order to maintain a complete control of the business. Such is accomplished by the use of the budget, to which considerable reference will be made in later articles, but the budget is different from the cost system, mainly insofar as it outlines things expected to happen, whereas the cost system outlines things as they ought to be and shows the cost of the difference between what is and what ought to be.

In laying out such a complete control we should take means to secure full particulars on all phases of the business, from the purchasing to the final disposition of the product, covering the following:

Purchases.
Production.
Orders.
Stocks of materials, goods in process and finished.
Sales.
Cost of sales.
Plant, including acquisition, present worth, depreciation and maintenance.

In order to secure control of these items we must provide for a series of periodical reports, and in laying out our system should consider who is primarily interested in just what items and how often data of benefit can be prepared for them; that is, how long a period is required before the figures really assume some actual meaning, for too short a period gives distorted results. For some purposes daily reports are needed, whereas for others anything short of a month, a quarter or even a year would give data that would not be truly representative.

We should provide for and determine the scope and extent of reports for the following:

Executive officers. Daily and monthly.
Mill manager. Daily, weekly and monthly.
Foremen. Daily, weekly and monthly.

Having now a knowledge of the nature of the problem, the layout of the mill and the particular points of importance to watch, the purpose of the system and the character of the reports desired, it is a comparatively simple matter to determine on the system itself.

Outline of a Standard Cost System

As to the actual mechanics of a standard cost system the reader is referred to the articles by Mr. Gould mentioned previously. The general outline is as follows:

Having determined definitely on the centers, the value of the physical assets of each is determined. The same applies to all the buildings and real estate. This may be done, sometimes through the aid of a competent plant record, or through insurance appraisals, or, as is sometimes necessary, by an appraisal of the accountant installing the system itself. Having secured such an appraisal the equipment is divided into classes, each class having approximately the same rate of depreciation and from this the charges for each center for this item are set up.

In the case of land and buildings, they may be treated either as a whole and the fixed charges for depreciation, taxes, insurance and maintenance, etc.,

determined and then prorated to each center on a rental basis per square foot, or the value of the real estate in each center may be the basis. In the same way insurance, taxes and, if included, interest on the investment are determined. If there be special charges, such as boiler insurance, chargeable directly to some definite center this is done. The average value of the inventories of raw materials, work in process, etc., are appraised and costs of taxes, insurance, etc., charged against the center responsible for the inventory. These all combined comprise what is known as the fixed charges and they are charged monthly to each center and corresponding entries made to the proper suspense accounts, such as depreciation, insurance unexpired, etc.

The labor for each center is then estimated. This, of course, includes only labor applying directly to the center. In cases where there is piecework done or where the labor may be directly charged to the product itself this is not included in the estimates for the center. Similarly, estimates are made for the different elements of supplies, such as felts, wires, belting, lubricants, etc., each of which may be kept separately in a subsidiary account until closed out each month. This method of classifying supplies is useful in setting standards at future periods. Repairs are treated in the same manner.

Estimates for steam and electric power are made, and in making the actual charges the method of charging should give data as nearly accurate as possible. Where meters are available the problem is simple, but in other cases the technical department must assist in arriving at a method that will be fair.

There always remain certain general charges, some covering a few centers, such as a filter plant, and some covering the mill as a whole. In each case an estimate is made of the total of these charges (a center being created to collect them) and they are then prorated on some equitable basis. In the case of general manufacturing burden (those charges affecting all centers of the mill) the basis may be in proportion to the number of men in each department, the pay roll plus the value of equipment and materials used, or some other method. There has been a great deal of discussion as to the fairest method of doing this with many arguments pro and con.

At the risk of being accused of accounting heresy, the author recommends using the number of men

(*Continued on page* 1765)

Form No. A.

X. Y. Z. PAPER CO.

BURDEN CENTER ____

	Ref.	Current Period Ending ____ Estimate	Actual	Burden Variance	To Date ____ Periods Estimate	Actual	Burden Variance	Current Period Ending ____ Estimate	Actual	Burden Variance	To Date ____ Periods. Estimate	Actual	Burden Variance
Fixed Charges													
Labor													
Supplies													
Compensation Ins.													
Gen. Mfg. Burden													
Steam													
Electric Power													
Repairs													
Redistributed													
Total													

	Ref	Debit	Credit.	Ref	Debit	Credit	Ref	Debit	Credit	Ref	Debit	Credit.
Total Burden												
Earned Burden												
Unearned Burden												
Burden Variance												
Total												

	Ref	Explanation	Amount	Ref	Explanation	Amount	Ref	Explanation	Amount	Ref	Explanation	Amount

Lessons in Paper Making

Lesson XXV—Distribution of Atmospheric Pressure—Suction Boxes

By HARRY WILLIAMSON
Class Instructor, Champion Fibre Co., Canton, N. C.

This article is the twenty-fifth of a series of lessons in practical paper making, appearing in The Paper Industry by arrangement with the Champion Fibre Company, Canton, N. C. These lessons are a part of the general education course, conducted by this company under the direction of Mr. J. Norman Spawn, educational director.

THIS month we will enter into a discussion of suction boxes. A cynical papermaker once make the remark that suction boxes constituted the main reason for fourdrinier wire manufacturers staying in business. While he exaggerated a bit, there is still a great deal of truth in his remark; some of it from an angle he never intended.

Those of us who are fathers and try to keep a family of growing kiddies decently clothed, realize that a lot of the modern merchandise seems to be made on the principle of "wear out quick and renew". The wire manufacturer of today who expects to remain in business works on the opposite plan. He recognizes the tremendous potential damage to his product in the operation of suction boxes, and designs, weaves and seams his wires to give the best wearing service under this strain. "Wear out quick" is the last thing he wants. Hours, days, or miles run; tonnage of salable paper produced are the figures he wants to see go higher and higher. Then his advertising manager and salesman have the most powerful talking point to convince the papermaker of the excellence of their particular make of wire.

If this is the aim of the wire manufacturer, how much more should it be the aim of the papermakers who have to use and buy the wires? Of the many factors which play their part in wearing out a wire, the manipulation and upkeep of the suction boxes is the most important.

The writer dealt at some length with the manipulation of suction boxes in Lesson XIII, published in the August, 1927 issue of this magazine. There are, however, still a few points which were not covered. One of these points is the distribution of atmospheric pressure when using multiple boxes. Before discussing this feature, perhaps it will be well to recapitulate the function of suction boxes.

Function of the Suction Box

From the slice to the first suction box we have the shaking or **making** portion of the fourdrinier. Subject to a sideways shaking motion as well as the initial velocity of flow, the fibers are woven into a homogeneous sheet of paper. The second portion of the fourdrinier frame which contains the suction boxes is not subject to this sideways motion. **The making process of the paper, as far as weaving the sheet together is concerned, is finished in the first section.** The **setting** or **pinning into position** of the woven fibers commences as soon as **they pass over first operating suction box.** In other words, we commence to solidify the sheet by drawing water from it by means of suction. The air is exhausted from the suction boxes by the work of the pump, the water rushes from the sheet to occupy the vacuum thus created and the atmospheric pressure is exerted on the surface of the paper over the applied suction area. Thus, we see a twofold action—the removal of water and the **laying of the fibers by atmospheric pressure.**

Which of these two is the most important, depends on the quality of paper being made. When making a news sheet at high speed, water removal is most important, but when making lithograph, book or "offset" paper, the laying of the fibers so that there will be no fuzz on the finished sheet is more important.

The volume of water to be drawn from the woven sheet is closely interlocked with the development of the fiber during the beating and jordaning and also with the speed of the machine. With these factors, however, we are not immediately concerned. The factor which interests us in relation to **the distribution of atmospheric pressure over the suction box area** is the **rate,** the volume of water per inch of applied suction area to be extracted, and the best operating point to extract it.

Whatever the quality of paper being made, **enough** water must be extracted by suction to prevent crushing at the first application of line contact pressure. If a top couch roll is being used, then the suction boxes must take out enough water to prevent crushing at this point. If a suction roll is being used, then the suction boxes need not take out quite so much water, as the paper must pass over the suction roll before it comes in contact with the first press—in this case, the first application of line contact pressure.

There is also another point in connection with the **necessity** of water removal by suction. The more

effective this is, the less volume of water the presses and wet felts have to remove. Although actual crushing may not occur, it is easily possible that too much water may be present in the sheet and felt marking will result. Particularly is this true if the wet felt should be worn to the extent of losing resiliency.

In Lesson XXIV, published last month, we took for an example the atmospheric pressure per square inch applied to a suction roll with 20 inches of vacuum registered on the vacuum gauge. We found that we had a total pressure of 7840 pounds over the applied suction area or a pressure of 9.8 pounds per square inch. The box in question was 160 inches across the machine and had five linear inches of suction area for the paper to pass over. We therefore had an equivalent pressure of 49 pounds applied to each inch width of paper as it passed over the suction roll.

Line Contact Pressure

The importance of **distributing pressure while the paper is still in a very wet state cannot be stressed too strongly.** Cognizance of this factor resulted in the invention of the suction roll and also the careful development of the density of rubber press rolls as registered by plastometer reading.

Assuming for the moment we desired to apply a line contact pressure equal to 49 pounds per linear inch, while using a top couch roll instead of a suction roll. The nip width formed by the conjunction of the top and bottom couch rolls would vary according to the diameter of the rolls, but even with a new jacket on the top couch roll, the nip width would not be greater than one inch. If we arrange a table showing nip widths of .1 graduations, the number of square inches of line contact and the pressures applied at these nip widths equal to that applied to the example in the suction roll, we can the more easily visualize the **necessity** for a wider **distribution** of pressure.

NIP WIDTHS

	.1	.2	.3	.4	.5	.6	.7	.8	.9	1
Square inches applied pressure	16	32	48	64	80	96	102	128	144	160
Pressure applied in pounds	490	251	164	122	98	81	76	61	54	49
Time for application	1/50	1/25	3/50	2/25	1/10	3/25	7/50	4/25	9/50	1/5

With the minimum nip width of .1 inch, we see that we have to apply the enormous pressure of 490 pounds in one-fiftieth of the time to get the same result in water removal and laying of the fibers which would be effected by using a suction roll box five inches wide with a register of twenty inches of vacuum on the vacuum gauge.

As the average sheet of paper is still composed of 85 per cent water and 15 per cent fiber **when it leaves the wire,** we can readily conceive what would happen if we applied the pressure of 490 pounds in the time indicated by our extreme example, immediately **before** the sheet left the wire. Distribution of pressure is arranged to **prevent disruption of the formed sheet. Atmospheric pressure can be more easily distributed than line contact pressure.**

Atmospheric Pressure Applied

In our example of a suction roll, we are limited to the use of one suction box. Therefore, we are compelled to accept the width of that suction box for the application of atmospheric pressure. We can, however, regulate the **amount** of pressure applied per square inch.

In the application of atmospheric pressure on the flat suction boxes, we have greater latitude. We can regulate the total amount applied and also the amount applicable **to each box.** Our limits are the capacity of the pump and the number of suction boxes available.

On the suction roll box we have to raise a higher vacuum than we do on the flat boxes; therefore, we need a pump of greater capacity. The speed of these suction pumps and the pipe dimensions are figured out by the engineers to exhaust a volume of air which will be equivalent to the vacuum and resultant atmospheric pressure desired. If we think of the work of a suction pump in terms of **air exhaustion,** we will better appreciate the necessity to prevent or **permit** air leaks into a suction box, **and the reason why there is no register of vacuum on a suction box kept filled with water.**

Capacity of a Suction Pump

Volume IV, "The Manufacture of Pulp and Paper" says, "The displacement of a suction pump should approximate 500 cubic inches per inch width of wire and for each 100 feet of paper made per minute. Hence, for a width of 130 inches and a speed of 450 feet per minute, the displacement under these conditions should be $500 \times 130 \times \frac{450}{100}$ equals 292,500 cubic inches per minute".

Without going into the question of pipe friction and possible leaks, and as one U. S. gallon of water equals 231 cubic inches, a pump of this capacity will exhaust 1266.33 gallons of water per minute. But we do not give it that volume of water to exhaust, so the pump exhausts air—air from the pump casing, air from the piping, air from the suction boxes, **and then air through the paper. The resistance of the paper to the passage of air, the seal over the suction boxes, is indicated by the inches of vacuum registered on the vacuum gauge.** This register is a register in pounds per square inch of **the unsatisfied capacity of the pump.** By that statement we mean, the developed capacity of the pump **not supplied with either water or air.**

To use extreme examples, if the pump displacement is 1266.33 gallons of water per minute and this volume **totally filled** the suction system from the top of the suction boxes to the pump outlet, **then there would be absolutely no register of vacuum as an indication of the work done by the pump.**

If the suction system is only **partially** filled with water and the paper is sealing the boxes, if under these conditions we open up the vacuum breaker or pull out the suction box heads to permit the **free** access of air to the pump **equal in volume to the amount of resistance or seal offered to the work of the pump by the paper, then again there will be absolutely no register of vacuum.**

Now that we have reviewed this particular pump's capacity to handle water, we will estimate the same capacity in air and calculate just what air pressure per square inch that would mean, **if the admission of air to the suction system were absolutely precluded.** In this case, we will have to assume 100 per cent efficiency for the pump capacity and a **total seal.**

In our last lesson we dealt with the data and method whereby a **standard pressure** of air was found. This standard pressure is 14.7 lbs. per square inch at 0 degrees C., and at sea level in latitude 45 degrees. As we know, this figure represents the **density** of the air, and the density of the air changes with elevation and temperature. As a point of interest, the density of air at a height of three miles is estimated at the equivalent of 15 inches of mercury or 7.5 lbs. per square inch pressure. It is also estimated that if an opening could be made in the earth 35 miles in depth below sea level, the density of the air at the bottom would be 1000 times that at sea level, so that water would float on it. (I am sure brother papermakers concerned with the hereafter will be more interested in the depth pressures than the height pressures).

To resume. Just a little more foolin' with figures and we will summarize. The weight of a cubic foot of air at the standard pressure of 14.7 lbs. per square inch at sea level and at a temperature of 70 degrees is .07491 lbs. The capacity of the pump is 292,500 cubic inches per minute. This is equal to 169.26 cubic feet. Therefore, we arrive at the equation, 169.26 cubic feet x .07491 lbs. equals the pump capacity of raising 12.67 lbs. per square inch pressure, or 25.5 **inches of vacuum register on the vacuum gauge.**

With a pump capacity of 292,500 cubic inches per minute, we have the following factors:

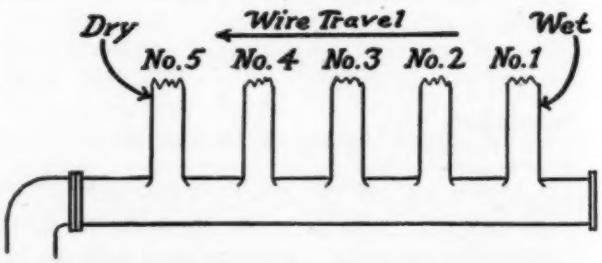
1—If a continuous flow of a volume of water equal to 1266.33 gallons per minute would totally **fill the suction system,** then this pump would continue to draw that volume, **but there would be no vacuum created, no passage of air through the sheet and while water would be extracted, the fibers would not be "laid" by pressure.** Take such a sheet from the wire and its surface examined under the microscope will remind you of a cactus strewn desert and the topographical countours of the Rocky Mountains.

2—If the paper contained no **free** water as distinct from the water of hydration, and the paper completed a 100 per cent seal to the passage of **free** air to the suction system, in other words, neither water nor air could obtain admission to the suction system, then the work done by this pump would be indicated by a register of 25.5 inches on the vacuum gauge. This, as we know, is equal to a pressure of 12.67 lbs. per square inch over the applied suction area, **and such a pressure applied to the flat suction boxes would stall the wire.**

Distributing the Atmospheric Pressure

Now to apply the conclusions from these boresome figures to practical, everyday operation of the paper machine. We see that water in the suction system by satisfying the **work** of the pump **reduces** the vacuum register and the resultant atmospheric pressure. **Yet we know that sometimes when we put extra water on the machine, the vacuum register goes higher.** What causes this? The volume on the wire is **stock—fibers** and water. When we add water, we have added a medium which **keeps the fibers in suspension until the sheet is closed up better.** By this means, we are offering a **more effective seal, a more effective resistance to the passage of air to the suction system.** Suppose the formation is already as perfect as it can be made with that particular kind of stock and we add more water, if we do not raise the slices at the same time to neutralize the increased velocity, the formation of the sheet will be disturbed, **the sheet will be more open and the register of vacuum will drop because there is more free air gaining access to the suction system.**

In the sketch we have the piping to five flat suction boxes. The total vacuum on the header is represented by a register of 8 inches of vacuum. Assuming a perfect suction system and using the rated capacity of the pump as a constant base, we can work a few calculations which will give us an empirical idea of the volume of water each box is taking and the vacuum created in each box with the resultant air pressure on the surface of the sheet at each box. The rated capacity of the pump is 292,500 cubic inches per minute. There are five suction boxes each



with equal area as to box and pipe connections; therefore, the rated exhaustion capacity of each box is 58,500 cubic inches per minute, or 33.31 cubic feet. 33.31 cubic feet of water equals 253.24 gallons per box per minute. 33.31 cubic feet of air at .07491 lbs. per cubic feet equals 2.4 lbs. per square inch pressure, or a register of vacuum of 5.08 inches. These are the total 100 per cent efficient capacities of each box in water and air exhaustion separately.

The following table shows us the respective values worked out in approximated percentages:

	Per cent water	Gallons per minutes	Per cent air	Pounds pressure per sq. inch	Inches Vacuum Reg.
Box No. 1	100	253.24	0	0	0
Box No. 2	90	227.9	10	.24	.4
Box No. 3	80	202.6	20	.48	.98
Box No. 4	50	126.6	50	1.2	2.4
Box No. 5	10	25.3	90	2.16	4.42

The total water handled is 835.64 gallons per minute. This total satisfied work of the pump equal to 100.4 cubic feet and the difference between this total and the full rated capacity of the pump is represented by a register of 8 inches of vacuum on the gauge and a distribution of the atmospheric pressure of 4.08 lbs. per square inch over the applied suction area.

The manipulation of the suction with due regard to the desired results constitutes a large portion of the art of papermaking. To extract water, to "lay" the fibers, to save the wear of the wire—these are the prime factors which should govern our actions in relation to the operation of suction boxes. By a thorough understanding of the fundamental principles we can make thousands of adjustable applications. A little touch here and there, perhaps stopping an air leak, perhaps creating an air leak, a partial closing of a valve to permit the succeeding box to have a little larger volume of water, the opening of another box, the adjustment of the vacuum breaker, or the dropping of a worn box out of action. All these things come under the minor head of distribution of atmospheric pressure and the major head of papermaking.

How Fireproof Paper Is Made

Developments in the Production of Paper Products That Are Designed to Resist Fire Damage

THERE has been of late a revival of interest in processes for the manufacture of incombustible paper and paperboard. A German chemist, Franz Frank, of Berlin, is reported to be the inventor of a process for treating pulp in such a way that paper manufactured from it can be exposed to a temperature as high as 700° Cent. without charring. Pending the issue of a patent, no details of the process are available. It is known that an autoclave is employed, the pulp as it comes from the digester being subjected to a special chemical treatment in the autoclave at an exceedingly high pressure (one report says 200 atmospheres) after which it is manufactured into paper in the usual manner.

In the absence of definite information concerning the inventor's process not much can be said on the subject. It can be stated, however, that the new process is not one of simple impregnation or of mixing the pulp with asbestos or other incombustible mineral matter. The cellulose is subjected to chemical treatment which gives the paper produced from it the property of incombustibility. The paper itself shows no outward appearance of the chemical transformation which has been effected in the fibers.

In a demonstration of the properties of the new incombustible paper it was shown that when a piece of ordinary newsprint was enclosed in a bag of it and this bag was exposed to a naked flame, the appearance of neither bag nor newsprint paper was affected, the heat being unable to penetrate the bag. This is a property of the paper that would seem to make it especially well suited for the manufacture of theater decorations, the making of paper lanterns, and of lampshades and similar articles. And if a paper can be produced carrying fire-resisting qualities such as this within its substance, it should also prove valuable for heat insulation and probably electrical insulation as well.

In a premilinary report contributed to the **Chemiker Zeitung** (78, 1928), which is cited in **Wochenblatt für Papierfabrikation** for November 10, 1928, it is pointed out that the new paper would be unsuitable for the paper bag cookery which enjoyed some popularity a few years ago, for the reason that the use of paper bags involves internal heating and the new paper is an extremely poor conductor of heat. In paper bag cookery the steam and vapors produced within the interior of the bag protected the paper from the action of the outer flame or heat.

The inventor is now engaged in experiments for the production of an ink which will also resist high temperatures, the idea being to use an incombustible paper with such an ink for valuable documents. He is also trying to embody an incombustible textile in the substance of the paper. If documents, official deeds, drawings, valuable literary works, etc., can

be protected from fire damage, the matter is of great practical importance.

Known Methods of Fireproofing Paper

The older method of manufacturing fireproof paper was to impregnate the finished paper or board with a solution of a chemical substance that was known to impart fire-resisting properties. A large series of inorganic salt solutions have been employed for the purpose, chiefly ammonium sulphate, magnesium sulphate, sodium borate, alkali phosphates, zinc salts and such like. Among the newer chemicals employed for fireproofing paper and textiles, a titanium salt, such as the sulphate, would appear to be the best suited of all, though the treatment of the pulp during its manufacture into paper must be regarded as superior to any method involving the impregnation of the paper sheet with fireproofing chemicals.

Recent patent literature pertaining to fireproof paper does not reveal much information of importance, for the patents are concerned chiefly with processes for the manufacture of a more flexible and suitable material containing asbestos fiber as a base with the addition of starch or other binders. Similarly in the impregnation of the paper web with solutions of inorganic salts no new applications are to be found in the literature; nearly all prescribing the use of solutions which have been used in the past, though in different combinations. Thus, a recent French patent specifies an old fireproofing agent, ammonium sulphate, in combination with boric acid, while a modern American invention provides for the use of waterglass in combination with tungstate salts and soda solution. Tungstates have been used in Germany for the same purpose for a long time past and their use is protected by many patents. The application of sodium silicate or waterglass for fireproofing paper is also quite old, Fuchs, the discoverer of waterglass, having mentioned its use for this purpose. The only new feature in the fireproofing of paper by impregnation appears to be the use of organic amines in the place of inorganic ammonium salts.

Glass wool figures in a recent French patent as a substitute for asbestos fiber, the furnish consisting of 20 to 50 per cent of groundwood pulp and 50 to 80 per cent of glass wool, while an Austrian process for fireproof and waterproof paper and board calls for the use of chlorinated naphthalene, either alone or in combination with salt solutions.

The earlier salt impregnation processes have fallen into disuse. Though the results obtained with sodium tungstate solutions are said to be quite satisfactory, the chemical has been found to be too expensive for general application to paper and paperboard products.

Some Rules and Other Information

By W. F. SCHAPHORST, M. E.

Collapsing Strength of Pipes and Tubes

WE SOMETIMES want to know the safe strength of a pipe or tube in resisting collapse. Here is a first class rule for all ordinary pipes where the pressure is less than 580 lb. per square inch and where the thickness in inches divided by the outside diameter in inches is less than .023:

> Square the thickness of the metal in inches, multiply by 1600, divide by the square of the diameter of the tube in inches, subtract the quotient from one (1) and then extract the square root of the difference. (This square root will always be less than one, of course. Thus if the difference is 0.64 the square root will be 0.8). Next subtract the square root from one (1) and multiply the remainder by 1,000. The result is the collapsing pressure in pounds per square inch.

For large sheet metal ventilating pipe—14 to 22 gauge inclusive—use 500 instead of 1,000 and the above rule holds.

Where the pressure is greater than 580 lb. and the thickness divided by diameter is greater than .023, use this rule:

> Multiply the thickness in inches by 86.670; divide by the outside diameter in inches, and from the quotient subtract 1386. The result is the collapsing pressure in pounds per square inch.

How to Bend Pipe

A QUESTION that is often asked is: "What is the best way to bend pipe?"

By way of reply, the following experiences will probably be of interest:

To bend large pipes, fill with dry sand and plug the ends. Heat to a red heat in the localities to be bent and then bend. Be sure that the sand is dry. Where bends are slight, it is often unnecessary to use sand or resin. The object of sand or resin is simply to keep the sides of the pipe from collapsing, or to prevent reduction of flow area. If wet sand is used, and if the ends are plugged, the pipe may burst when heated, due to the steam pressure generated.

Instead of sand, resin is good. There is, however, a "right way" and possibly several wrong ways to use resin. An example of a wrong way was recently brought to my attention where the mechanic filled the pipe with resin, plugged the ends, and heated the pipe at the place where he wanted to bend it. He watched for a "red heat" just as he would, had he

filled the pipe with sand. The result was—a violent explosion.

To use resin correctly, pour it into the pipe and allow it to cool and harden. As soon as the resin is hard, bend the pipe cold. Don't heat it. Then after the pipe is bent, heat the pipe all over sufficiently to melt and remove the resin.

Equal results may be secured by using lead instead of resin. I have been told that on cold days in the far North they sometimes fill the pipe with water and let it freeze, and then bend the pipe. It sounds plausible, but care must be exercised there on account of the expansion of water when it freezes.

Many excellent mechanical devices are on the market for bending pipe. To bend large, stiff pipe slightly, and inexpensively, there is nothing handier or more efficient, in my judgment, than a hydraulic pipe bender driven by a hand pump.

Steam Flow Rule for Pipes

HERE is a very simple rule which will enable anybody to calculate the amount of steam that any pipe will carry, knowing the velocity of steam through the pipe and the pipe diameter.

6,000 feet per minute is the most common velocity allowed for steam. However, sometimes higher velocities are required and sometimes lower velocities are desirable. The rule can be altered to take care of any velocity. It is as follows:

> "Square the internal diameter of the pipe in inches, and multiply by 5.46. Then divide by the specific volume of the steam in cubic feet per pound."

This rule gives the total number of pounds of steam that will be carried by the pipe at a velocity of 1,000 feet per minute.

For 2,000 ft. per min. multiply by 10.92 instead of 5.46
For 3,000 ft. per min. multiply by 16.38 instead of 5.46
For 4,000 ft. per min. multiply by 21.84 instead of 5.46
For 5,000 ft. per min. multiply by 27.30 instead of 5.46
For 6,000 ft. per min. multiply by 32.76 instead of 5.46
For 7,000 ft. per min. multiply by 38.22 instead of 5.46
For 8,000 ft. per min. multiply by 43.68 instead of 5.46
For 9,000 ft. per min. mulitply by 49.14 instead of 5.46
For 10,000 ft. per min. multiply by 54.60 instead of 5.46

For example, how many pounds of steam at 200 pounds absolute pressure per square inch, will flow through a pipe whose internal diameter is 4 inches? This is a typical problem.

First, look up the "specific volume" of 200-lb. steam. You will find it in any first class steam table. "Specific volume" is the number of cubic feet occupied by one pound of steam. The greater the pressure, the less the specific volume, of course, because at high pressures the steam is squeezed into smaller space.

You will find in your steam table that at 200 pounds absolute pressure, 1 pound of steam occupies 2.29 cubic feet. You therefore simply multiply 4 by 4, then by 5.46, and lastly divide by 2.29. The result is 38.1 pounds of steam per minute at 1,000 ft. velocity.

For other velocities, use the figures given above in place of the 5.46. In the event that you should want the velocity to be an intermediate figure, such as 4,500 ft. per min., multiply the 1,000 rate by 4.5. It is very easy after you once get the hang of it.

Why Do Ceilings Sweat?

MUCH money is unnecessarily lost every year due to ceiling sweat. There should be no such losses because they can be easily prevented in any building by proper insulation.

I believe that if the cause of ceiling sweat were better understood and if the necessity of correct insulation were fully explained, owners and officials would one and all see to it that roofs would be made immune to sweating.

There is no mystery about this subject. Just a few minutes study and every reader will know WHY ceilings sweat, and why a properly insulated ceiling will never give trouble in this respect.

Where does the sweat come from? It comes from the air. Perfectly dry air does not exist in nature. There is moisture in the air over Sahara and over the north pole. Therefore, to understand ceiling sweat, it is necessary to become acquainted with the properties of air in three forms—dry, saturated, and humid.

Dry Air is air that is entirely void of moisture. Perfectly dry air must be made dry artificially—by mechanical or chemical processes. For example, air can be made dry by substances that have great affinity for water such as chloride of calcium, sulphuric acid, and unslacked lime.

Saturated Air is air that contains as much moisture as it can possibly hold at any given temperature. During rainstorms, air is generally so completely saturated that clothes hung in sheltered spots to dry will not become dry because the air is "100 per cent wet." It is obvious that air must be at least somewhat dry before it will absorb moisture from wet clothes.

Humid Air is any air that contains moisture. Thus saturated air is humid air, but humid air is not necessarily saturated. Air containing any degree of moisture above absolute dryness is humid air.

Relative Humidity is the "percentage of saturation". For example, a given amount of air when "saturated" will hold one pound of water. However if it is found that it contains only one-half pound of water, the "relative humidity" is 50 per cent. If it contains 0.25 lb. water the relative humidity is 25 per cent; 0.75 lb. water, 75 per cent,—etc. In other words, divide the weight of water actually in the air by the weight it will hold when saturated and you have the relative humidity.

That, surely, is simple enough so that anybody

can understand it. Probably the words "relative humidity" sound too complex. It might be better understood if it were called "percentage" of maximum moisture."

Warm air will hold more water than cold air. That is why heating clothes makes the clothes dry. The heat warms the air and the air absorbs the moisture out of the clothes.

Let us suppose that the air a mile above the earth is "saturated" and that its temperature is 60 degrees Fahr. The slightest drop in temperature will cause "rain" because the cooler air cannot hold so much moisture.

Let us now suppose that the air one-half mile lower down has a relative humidity of 50 per cent and that its temperature is 60 degrees Fahhr. As the "rain" passes into this dryer and warmer air it will be reabsorbed and will not reach the earth. "Rainstorms" of that kind frequently occur high up in the air. No doubt every reader has seen them as they are visible very often. In order that rain may reach the earth, conditions must be such that all of the water will not be reabsorbed into the air during the descent of the water toward the earth.

It is now easy to understand why a pitcher of ice water invariably becomes covered with "dew". The thin film of air surrounding the pitcher becomes cooled to such an extent that it is cooled below the saturation point and moisture must, of course, be given up. But when the temperature of the water in the pitcher is not low enough to bring the temperature of the air film down to the saturation point—then there is no deposit of dew. This explains why water particles never collect on a warm or hot pitcher.

Nature presents some very interesting and striking examples of what might be called "humidity control." Surrounding the plateau of Tibet, for instance, we have the highest mountains in the world. At the tops of these mountains the temperature is intensely cold throughout the year. Across these mountains comes air of high relative humidity blown from the valleys of Asia. As a result practically all of the moisture in the air is deposited on the mountain peaks and there is none left to fall as rain on the Tibetian plateau—hence its extreme aridness. In the summer it is exceedingly hot and dry and in the winter intensely cold and dry with practically no rain or snow at any time. The above explains "why."

Similarly in a room cooled by mechanical refrigeration we have pipe coils of very low temperature. Warm air carrying moisture rises, envelops the pipes, is cooled, deposits moisture on the pipes where it freezes and forms "frost". The cooled air then drops and makes way for other warm moist air moving upward. In other words, circulation of air is established. Naturally, as this circulation continues, the relative humidity of the air becomes less and less provided the room is kept closed. Eventually the air will become practically "perfecty dry," all moisture adhering to the pipes in the form of frost. In fact, one objection to mechanical refrigeration is that the air becomes so dry that fruits, meats, vegetables, cheese, eggs, etc., give up moisture and may diminish in weight to a serious extent.

In view of the above since warm air can carry more moisture than cold air, it is plain that warm air is more liable to give trouble from sweating than is cold air.

Another characteristic of warm air is that its tendency is to move upward because it is lighter than cold air. This explains why warm air, containing more moisture than the other air in the room, moves to the very top of the room and comes in contact with the ceiling. If the ceiling is cold enough, precipitation will always occur, and if there is no insulation on the roof to keep the cold out, precipitation will continue indefinitely. As long as the ceiling is cold enough to cause the precipitation to continue, drops will form and there will be dripping.

Sweating on cold side walls is less serious than on cold ceilings because the average air in contact with the side walls contains less moisture, and besides, instead of dripping from side walls the sweat simply clings to the side walls as it runs down in "streaks". This explains why it is more important to insulate ceilings than side walls.

To be sure there is no such thing as a "perfect" roof insulator. A perfect insulator would permanently keep out every bit of cold. Or, in other words, a perfect insulator would never permit the passage of a single B. t. u. of heat.

When a roof is properly insulated, cold cannot get through to the ceiling below. Hence the temperature of the ceiling of the room is always exactly the same as the temperature of the warm strata of air at the top of the room. Therefore, for reasons I believe I have fully explained, there can be no precipitation, no sweating, and no dripping.

There are numerous roof insulating materials on the market. Pure cork board is generally acknowledged to be the best although its first cost is highest. Cork is one of the lightest materials known. It is strong in tension and compression. It lasts indefinitely. It burns with such difficulty that it is practically fireproof. And by covering with tar it is easily kept absolutely dry so that it insulates the roof permanently and with maximum efficiency.

Humanity has a long road to perfection, but we of America can make sure of progress if we will preserve our individualism, if we will preserve and stimulate the initiative of our people, if we will build up our insistence and safeguards to equality of opportunity. and if we will glorify service as a part of our national character.—Herbert Hoover.

Current Thought by William Sibley

The Age of Change

TEN or twelve weeks ago a few electrical technicians, in the laboratories of the General Electric Company, designed a new type of vacuum tube with which to further the experiments of broadcasting power by radio. This had been done, experimentally, a long time but only on a laboratory basis. What these men were in search of was closer approximation of perfection to present-day methods. Hence this new tube.

The new tube worked. Through it, the 3 h.p. motor hummed into activity as reliably as if it had been connected with wires. But what astonished these experimentors was not the fact that they were broadcasting power or electrical energy successfully. That had been done before. The astonishing thing was the fact that the technicians working close to their new tube became insufferably hot. Although not conscious of heat, and with no sensation similar to that which attends standing close to an open furnace or oven, these men dripped with perspiration—became so heated as to be faint. And understand, please, the temperature of their laboratory had not changed and their new tube, even while in operation, was cool to the touch.

In an endeavor to explain this phenomenon, the technicians adopted new tactics—started a new experiment. They ranged on a nearby table (free of any connections) three ten-gallon pails of water. One pail contained pure, distilled water; one pail was filled with ordinary water from the faucet, while the third was filled with a saline solution—pure water having the same percentage of salt as is contained in the blood. These arrangements having been made, the new tube was again put into operation, broadcasting power by radio. **In less than two minutes the saline solution was boiling, while the water in the other two pails had not changed temperature!**

That experiment proved that they had developed a way to broadcast heat by radio. And, furthermore, heat of a particular kind that would effect the blood but allow the water in the faucet, ice, or any dissimilar chemical to remain unaffected. On perfection of this scheme we will be able to walk down Michigan Avenue in Chicago, or Hennepin Avenue in Minneapolis, in the middle of February—dressed in palm beach suits, straw hats and low shoes—yet be entirely comfortable. Merely equip ourselves with a portable receiving apparatus capable of extracting radio-broadcasted heat, thereby warming our blood and keeping us in perfect comfort.

Perfection of this scheme means much more than a mere upset to the clothing industry, however. It means that any patient in need of heat, air, and the life-giving actinic and ultra-violet rays of the sun, may strip themselves to the skin, go out of doors (though it be 20° below zero) and yet be in full comfort. All that will be necessary is to give the naked patient contact with the apparatus which would transmit heat to the blood by radio.

What an age!

We have progressed through the ages of stone, bronze, iron, steam, to modern electricity. Taking our past ages collectively and using our lessons and benefits cumulatively, we find ourselves entered upon the "Age of Change". And failure be unto the man, regardless of his present day condition, who does not realize this fact and alter his methods accordingly.

Photographs by radio. Machines that think. Gas made from water. Power generated from the tides. Fireclay melted by sunlight. Lights that pierce the densest fog. Horns that may be heard 40 miles. Beacons that are visible 250 miles. Five million volt guns designed to smash and break up atoms. Street and traffic lights controlled by sunlight and clocks. Cameras that photograph color and record the path of lightning flashes. Electric shovels that scoop 90 tons at a single dipper full. Invisible motion picture apparatus to catch burglars. Vending machines to make change and sell merchandise.

Devices to detect flaws no bigger than a pin-head which may be buried deep in steel—without touching the surface or marring the finish. Machines to measure the smoothness of highways and railways. Devices that strip telephone cables. Instruments which put news in type as rapidly as it comes over the wire. Machines to transmit personal handwriting 500 feet away. Instruments to transcribe phone

calls that may come in while the receiver is away. Devices to shoot cement, bury power wires, darn stockings, and administer anesthetic.

Instruments which will measure one-billionth of an inch, register and predetermine the occurrence and severity of earthquakes, make jewelry out of shark's eyes, silk out of cotton and spruce pulp, freeze fire, identify delicate tints, grade eggs, cigars and fruit automatically.

Machines to provide secrecy in radio broadcasted messages. Instruments to simultaneously exert pressure and heat in such enormous degrees as to manufacture pure carbon diamonds. Devices which can hear light and see sound. Microphones which will pick-up and amplify the voices of insects. Automatic devices which render a train wreck impossible, even by the wilfully malicious. Devices to control heat at 5500° F.—twice that of molten steel. Electric shovel so large as to be able to lift and deposit 24 tons of materials on top of an 8-story building; or, if placed in the center of a football field, could excavate the entire field without moving in its tracks.

Science and Engineering Are in Control

Science and engineering are rapidly gaining control of our social and economic structure. And the manufacturer who fails to realize that fact, or to keep abreast of every development having even a remote connection with his business, will presently find himself in the position of Gibralter, where former impregnability has been rendered inconsequential by the airplane, an instrument developed by men who knew nothing of fortifications.

If there be those who doubt the possibilities of being effected by developments in other and hitherto considered "extraneous" industries, consider only rayon.

Rayon—a product unknown, popularly, a few years ago—is today the product of a mighty industry. Formerly our silk came wholly from Japan, China and the Far East. America, consuming three-fourths of the world's supply of silk meant, for the Orientals, that the great Eastern silk industry was almost entirely dependant upon America for existence. Last year we imported raw and manufactured silk valued at nearly a half-billion dollars. Literally hundreds of thousands of peope in the Far East and in the Orient are making their livelihood through this American trade.

Today, rayon threatens the destruction of this great trade. Already tens of thousands of Chinese and Japanese are out of employment because of the advent of rayon. Should rayon consumption continue to increase during the ensuing five years in proportion to the last five years; or, should it be made water-proof, or provided with qualities that would make it superior to silk (and who is there to say it cannot be done) and Japan and China will suffer greatly. Unemployment, privation, hunger stares hundreds of thousands of Orientals in the face—because of rayon.

What then—? No one would dare vouchsafe the answer. Low incomes (or none at all) means hunger and want. Revolution follows on the heels of discontent. If, as a stay to unemployment and famine, Japan or China should turn more strenuously to the exploitation of Manchuria and Siberia—who can say? Perhaps the hum of the Tennessee and New England rayon mills may echo in the chancelleries of the East, in the Halls of the "League", in the embassies of the World!

Everywhere the influence of science and engineering is being felt. Within the past month the Radio Corporation of America has requested the Federal Radio Commission to allot them some 148 short wave lengths, that they might inaugurate a radio message service in competition with the telegraph and the telephone. Such a development means still faster message service for everyone in business.

During the early part of 1928, a research engineer in Bridgeport developed a machine that will look through solid steel and detect flaws that may be six or eight inches beneath the surface. This means that high speed turbine wheels, steel rails, and other parts which must have a high degree of perfection may now be manufactured with a far greater degree of accuracy than ever before.

One-way glass has been developed. This is a glass that permits vision from within and light from without but which appears to be an opaque panel to the person on the outside. We now have "squirtless" grapefruit, a new variety of lime which may be grown throughout the South, and new fruits called "citrangequat" and the "tangelo"—products of cross-breeding among present day fruits.

We are learning how to heat garden and grain soils by electricity which, when perfected, will eliminate the possibility of destructive frost. In the fishing industry, electricians have perfected a means for electrocuting the water to a distance of twenty feet in radius, which electrical current renders all fish unconscious, causes them to float to the surface where they may be harvested by hand, but which return to consciousness and swim away once the current has been turned off or passed on.

Much has been written about the wide uses of the photo-electric cell which is so sensitive that it transforms changes in light intensity into electric fluctuations. One such cell stands on "McCormick Road" near Chicago and stares endlessly, and coldly, at the stream of motor traffic that passes constantly. While doing so, it registers the number of vehicles that pass, and whether or not they are closed jobs. Employing that principle, the management of one large Michigan paper mill placed one of the cells beneath the strip of paper passing through the paper machine. Any tendency of the paper to become too thick or too thin changes the amount of light transmitted, which alteration sets the cell into operation —and brings about an immediate automatic adjustment of the machinery. Thus, has the rather visionary and chimerical technician contributed to increased perfection in paper finishes and quality.

Scarcely less wonderful is the device now obtain-

able for many different kinds of machinery—which will instantly stop the machine at the cry of "Help". Wireless waves are the medium employed in the operation of this system and in providing "audible control". However, the microphone which operates the system is so sensitive that it will discard ordinary conversations and react only to key words previously chosen. This sort of thing indicates the coming of a time when trains will start and stop, doors will open and shut, and typewriters operate at audible dictation.

Grade crossing accidents have been a source of worry to the railroads since the advent of the automobile. During the past year, there was developed a new type of approach to grade crossings—a set of wide rollers which are embedded into the surface of the highway immediately approaching the crossing on either side. These rollers are fixed and stationary so long as no train is in the block or about to cross the highway. With the approach of a train, however, these rollers lose their fixity and an automobile finds itself on a tread-mill should it attempt to cross the tracks while the train was approaching.

Speaking of "rollers" and of railroads, calls to mind the new roller bearing journals for locomotives and rolling stock—which bearings reduce friction to an extent where a 30-car train can be hauled with no more power than is now required for a 12-car train. After years of apparent neglect of a promising opportunity (afforded by engineers **on the outside**), the railroads are finally coming to realize the enormous economies possible through the adoption of roller and ball bearings. However, before casting reflections against the management of our railroads, we are tempted to ask: How many paper mills are still using the old, and obsolete, power-consuming bearings which should have been replaced years ago, if only in the interest of the coal bills?

The addition of the baler to the combination harvester-thresher now coming into universal use (the machine that permits two men to cut standing grain, thresh it for the wagon or truck, and kick away the remaining straw in bales) is making the problem of straw accumulation for paper manufacture a thing of the past.

It must be apparent to every thoughtful person that the great, far-reaching changes now taking place every day in the year, are making yesterday's practices and last year's methods subject to immediate and drastic change. Without vision there can be no progress—and without knowledge there can be no vision. At no time in history has it been so imperative that we keep thoroughly informed of present day developments. Whole industries rise with the rapidity of the dawn. And by the same token, industries once well entrenched and "basic" find themselves with no market in just a few years.

This is the Age of Change. To make progress, we must be ready and willing to—**change.**

Cost Accounting

(*Continued from page* 1755)

as the basis, not because it is the best or fairest, but because it is the simplest. What should be considered is to what extent the use of one or the other system will affect the relative costs of the various products, to the end that each shall bear its fair share of the total. Thus if method of distribution A and method B give final relative costs as between different products that are substantially the same, the simplest should be chosen. The effect of the products on the charge in question should be the criterion and if there is no appreciable effect whether one product or another preponderate, so that an excess of some particular product will not increase or decrease the total amount of the charge, then an approximate or the simplest method of apportionment is sufficient.

After all the charges that go to make up the total expenses of a center have been estimated, standards are set for the number of units of operation that may be expected. These units may be machine hours, as with the paper machines; digesters, as with the pulp mills, or tons as the case may be. The total expenses divided by the units of operations give the rate. The product is then charged with the units applied to it at the rate per unit and the balance between the amounts so charged and the total estimated expenses is charged off to Unearned Burden. At the same time the actual expenses are collected and classified to compare with the estimates and the difference between the total actual expenses and the estimate is charged to Burden Variances. The sum of the unearned burden and the burden variance of a center is termed the Unearned Burden and Variance and represents the exact difference between the actual expenses and that charged to the product. This is a direct charge to profit and loss.

Form 2 (on page 1755) illustrates an excellent method of collecting the actual expenses for a series of months and comparing them, both currently and cumulatively for the period to date with the actual. Such a form comprises a sheet from the Burden Ledger and there is a sheet for each center in the mill. As all balances are closed out each month to the account Unearned Burden and Variance there are no balances in this ledger to be carried from month to month.

Form 2 and the discussion relating to the standard system heretofore relate entirely to the matter of conversion expense. Aside from this there are the matters of charging materials to the orders and the problem of building up the cost of each order—whether a job-order or a predetermined cost system should be used, and how each operates. These points will be discussed in detail in subsequent chapters.

Rules for 1929 Safety Contest

The Paper Industry Fifth Annual Safety Contest, Beginning January 1, 1929, Will End June 30, 1929

RULE 1—(a) This contest is open to all members, Paper and Pulp Section, National Safety Council, employing more than 20 employees in one mill, or as hereinafter provided, using fourdrinier, cylinder or pulp mill machinery and actually engaged in the manufacture of pulp, paper, container board, strawboard, plasterboard, roofing paper, insulating or wall board.

(b)—Mills solely engaged in paper converting, such as finishing, coating or paper goods manufacturing are not eligible.

(c)—Each company operating a paper converting plant in connection with and in close proximity to a pulp, paper or board mill, as defined in Rule 1 (a), may enter both plants jointly as one eligible mill.

(d)—Each company operating two or more eligible plants may enter its mills jointly as one contestant, or each eligible mill may be entered separately.

RULE 2—(a)—Contestant shall be divided into three groups, namely:

Group A—Mills employing 501 or more employees
Group B—Mills employing 201 to 500 employees
Group C—Mills employing 20 to 200 employees

(b)—A mill to remain eligible must operate a minimum of 70 per cent of the calendar working days in the period of the contest.

RULE 3—Contest shall start January 1, 1929, and end June 30, 1929.

RULE 4—The winner of each group shall receive the National Safety Council Trophy and shall be the mill receiving the greatest total number of **points credit** (or the least total number of points charged in the event there are no mills with credits) during the period of the contest, based on percentage reductions of both frequency and severity, as compared with the average contest frequency rate of 30.00 and the average severity rate of .60.

(A) **Frequency**—5 points shall be **credited** for each 1 per cent reduction as compared with the average frequency rate of 30.00. Likewise, 5 points shall be **charged** for each 1 per cent increase.

(B) **Severity**—1 point shall be **credited** for each 1 per cent reduction as compared with the average severity rate of .60. Likewise, 1 point shall be **charged** for each 1 per cent increase.

(Example)—Mill employing 500 men during the contest works 625,000 hours and has 25 lost time accidents causing 150 days lost time, thereby producing Acc. Freq. rate of 40.00 and Acc. Sev. rate of .24.

Freq. rate of 40.00=33.33% **above average** (30.00); therefore, at rate of 5 points for each 1%, the **charge** would be 166.65 points (5x33.33).

Sev. rate of .24=60% **below average** (.60); therefore, at rate of 1 point for each 1%, the **credit** would be 60.00 points (60x1).

Total points charge=106.65 (166.65—60.00).

RULE 5—In the event that two or more mills in any group have perfect scores, (no lost time accidents during the contest, which is equal to 600 **points credit**) the winner shall be the mill with the perfect record working the greatest number of man-hours during the contest.

RULE 6—A lost time accident shall be any accidental injury which comes within the scope of Note 4, page 4, and also on the reverse side of report form. This is interpreted to mean that **all time shall be counted as lost time until the injured employee returns to his regular occupation.**

RULE 7—All lost time shall be charged to the month in which the accident occurred. However, corrections may be made in previous reports, when the corrected report has been duly signed by the individual requesting such change and **Countersigned** by an officer of the company.

RULE 8—All contestants shall make monthly reports to the Chicago office of the National Safety Council on forms furnished as per enclosed copy. These reports shall be in accordance with all rules listed and notes on reverse side of report.

RULE 9—Reports must be mailed so they will reach headquarters office not later than the 15th day of month following.

RULE 10—Any contestant 30 days or more in arrears with its monthly reports shall automatically be withdrawn from the contest.

RULE 11—Every mill entered in this contest will receive a key number known only to that mill and one member of the headquarters staff, National Safety Council. Monthly ranking of mills will be published on this basis. Final rank numbers will be published with company names at the 18th Annual Safety Congress.

RULE 12—When the winner of each group has been definitely decided, the judges will award by a majority vote to the one of these three, having in their opinion, estab-

The Paper Industry 1927 Safety Contest

Accumulative Severity Rates of Mills in Group C, as of November 30, 1928

Participant	Mill	Rate	Participant	Mill	Rate
Kimberly-Clark Co.	Neenah	0	International Paper Co.	Winnipiseogee	.34
International Paper Co.	Riley	0	Union Bag & Paper Corp.	No. 5	.37
U. S. Gypsum Co.	Gypsum	0	Kimberley-Clark Co.	Atlas	.53
Upson Company	Board	.14	Lincoln Pulp & Paper Co.	Lybster	.57
International Paper Co.	Webster No. 9	.14	Union Bag & Paper Co.	Allen	.59
Gardner & Harvey Co.	No. 3	.15	Lincoln Pulp & Paper Co.	Lincoln	.88
Adams Bag Company	Chagrin Falls	.17	Union Bag & Paper Corp.	Fenimore	1.90
Gardner & Harvey Co.	No. 1	.20	Northwest Paper Co.	Brainerd	2.07
Bergstrom Paper Co.	Neenah	.26	Lincoln Pulp & Paper Co.	Sulphite	2.50
Gardner & Harvey Co.	No. 2	.30			

Group A—Nekoosa-Edwards Paper Co., Combined Mills .47 Group B—International Paper Co., Niagara Falls .45

Reports outstanding: Mead Pulp & Paper Co., Peerless Division; International Paper Co., Livermore.

lished the best record based on accident frequency and severity, man-hours worked, physical conditions and any other contributing factor, the grand prize cup donated by THE PAPER INDUSTRY of Chicago.

RULE 13—To all mills finishing in positions two and three, in each group, and to those finishing with a perfect record but not receiving the group trophy, the National Safety Council will present a Certificate of Merit.

RULE 14—Final award of all trophies and certificates will be made at the 18th Annual Safety Congress.

RULE 15—The judges of this contest shall be:

E. W. Beck, Safety Director, United States Rubber Co., New York City.
E. F. Blank, Safety Director, Jones and Laughlin Steel Co., Pittsburgh, Pa.
W. H. Cameron, Managing Director, National Safety Council, Chicago.
Edward B. Fritz, Publisher, THE PAPER INDUSTRY of Chicago.
G. E. Sanford, General Electric Co., Schenectady, N. Y.

RULE 16—All entries in this contest must be made on the "Official Registration Form" and received ON or BEFORE January 26, 1929.

The Paper Industry in 1928

Review of the Work of American Paper and Pulp Association

By O. M. PORTER, Secretary

THE American Paper Industry produced more paper in the first ten months of 1928 than in any similar period in any previous year; and yet it has not been a profitable year for the industry, generally speaking. Nearly a quarter of the industry's machine capacity has been idle. Despite this fact, however, new production facilities were added very much rapidly than increased consumption warranted. This condition naturally led to intense competition with the result that the profits of the industry were seriously affected.

Still further increased production facilities and keener competition may be expected in 1929, with little evidence of any improvement in the profits situation in the months immediately ahead because of the large percentage of present idle capacity and that which will be installed, particularly in the South and West.

paper industry stands 7th among the industrial groups nation. It is a fundamental industry, with an annual ion in excess of 10,000,000 tons valued at approximate-,000,000,000. One cannot picture our modern civilization commercial progress without the products of this tremendous industry. To meet these needs it must progress, it must operate at a profit and it must be a permanent industry. These objectives are those for which the American Paper and Pulp Association, as the parent, national association of the industry is working, and it is for these reasons that the association merits the industry's substantial financial support and the ready co-operation of its executive leadership.

Work of the American Paper and Pulp Association

The association's program for the fiscal year ending March 31, 1929, was developed to feature the following:

(a) Organizing the paper industry for tariff protection.
(b) Furthering the industry's legislative interest.
(c) Promoting waste utilization and stream improvement throughout the industry.
(d) Developing a dependable and comprehensive statistical service for the industry.
(e) Continuing effort to perpetuate the industry's wood supply.
(f) Providing effective, direct service to member mills.

That it has adhered to this program and has accomplished results of very material value and benefit to the paper industry is indicated by the following review of its activities:

Through the association's tariff committee and in the closest possible co-operation with the Import Committee of the Paper Industry, the industry is being thoroughly organized for tariff action in the interests of the industry as a whole. Changes to clarify the phraseology in the administrative sections of the tariff law and briefs as prepared by the several associations in the industry will be presented to the Ways and Means Committee of the House and to the Senate Finance Committee, through the association's general tariff committee's brief, in effort to insure adequate protection for the industry in the pending tariff revision.

The association has a strong statistical department under the direction of Mr. J. A. C. Kavanagh, its statistician. It furnishes mills reporting to it with a comprehensive printed statistical summary, monthly, and its facilities for special statistical reports and charts are being used by an increasing number of groups in the industry.

Through Mr. C. M. Baker, the association's engineer, the industry has been very well organized for work on waste utilization and stream improvement. His work demonstrates very clearly the value of co-operative effort along these lines and indicates the possibility of very profitable savings to the paper industry through waste utilization and stream improvement.

The association's woodlands section has been reorganized by its forester, Mr. Chas. W. Boyce, and the section has launched on a program which gives promise of great service to the industry as a means of insuring a permanent supply of pulpwood through practical forest management.

As a result of efforts by the association's former president and secretary, Mr. Norman W. Wilson and Dr. Hugh P. Baker, followed by the activities of the present officers of the association, Mr. M. H. Lund has been appointed by the Department of Commerce as Commercial Attaché at Oslo, with the understanding that a large proportion of his time will be devoted to the interests of the paper industry, thus giving the industry in effect a paper trade commissioner in Europe.

The association issues a weekly Business Review which, in addition to lead articles covering matters of interest to the executives throughout the industry, contains concise, accurate information regarding general business conditions and those prevailing currently in the paper industry.

During the past year, the association's structural organization has been strengthened by the affiliation of the Supply and Equipment Association and the Wallpaper Manufacturers Association, thus enabling it to extend its services to those branches of the industry.

Continued effort has been made also, through the association's officers, to bring about further organization in the industry.

The Future

There never was a time when the industry needed more intelligent and fearless leadership than at present. The attitude of the government is such as to encourage intelligent rationalization of industry and the paper industry of the United States must take advantage of this opportunity if it is to meet the competition of other industries and operate at a profit.

Announcement is made that the Eighteenth Annual Safety Congress will be held in Chicago, from September 30 to October 5, 1929, inclusive. General headquarters will be established at the Stevens Hotel, with additional accommodations in both the Blackstone and Congress Hotels. It is predicted that at least 7,000 safety workers will attend this meeting.

Modernizing Power Plants

Economies in Electricity and Fuel Effected by Modernizing a Pulp and Paper Mill Power Plant

By WALTER N. POLAKOV
Consulting Engineer, New York

WHEN a great public utility company decides to build a modern central station, the engineering problems envolved appear amazingly simple and uninteresting as compared with a similar job confronting an industrial corporation.

To begin with, only one form of power is usually to be generated, while an industrial plant has a demand for steam at different pressures, as for power—electrical, mechanical, pneumatic, hydraulic; and for refrigeration, heating, drying, lighting, transportation, etc.

Then, again a central station generally depends on but one kind of fuel, and sometimes on waterpower, whereas an industrial power plant frequently uses a variety of fuels; coal, fuel oil, wood refuse, as well as waste heat; perhaps it also purchases electric current from outside and has available water power.

Furthermore, the service requirements of a public utility plant are less trying and exacting owing to the great diversity factor, anticipated load changes, and only one kind of product handled, whereas an industrial power station is to be designed and operated to meet frequent and unexpected changes in load, in relative requirements for different forms of power and kinds of service, etc.

Last, but not the least distinction is that the equipment for a central station, for the foregoing reasons, is pretty well standardized and the requirements are known, anticipated and met by the builders of power equipment, whereas each case of an industrial power plant is by its very nature unique, highly diversified and therefore the selection and adaptation of existing equipment to highly individualized requirements is a task requiring considerable ingenuity.

A specific case of enlarging and modernizing the power plant of the Champion Fibre Company is an instance of considerable general interest.

Operating Practice

In 1925 this company operated two boiler houses, one known as Main Boiler House, equipped with twenty 316 hp. Heine Boilers and two 600 hp. Connolly boilers, six of the boilers being mechanically stoked with Taylor stokers and the balance of fourteen with Murphy stokers. The main boiler house had a capacity of 260,000 lbs. of steam per hour at 175 lb. pressure, while the other boiler plant, known as Sterling boiler house, containing four 823 hp. Sterling boilers, equipped with three Westinghouse and one Taylor underfeed stokers, had the rated capacity of about 115,000 lbs. of steam per hour, at 230 lb. pressure.

The relative efficiencies of steam generation in this plant, as illustrated on our cobweb charts (Figs. 1 and 2), indicated that only once within the first year on record (July), did the efficiency of the Sterling boiler house compare favorably with that of the main boiler house. The average efficiency of the Sterling plant was 63.9 per cent, whereas the main boiler house showed an average efficiency for the same year of 70.2 per cent.

Our recommendations as to method of operation, instrument equipment, and managerial practice were adapted for the Sterling plant as the weakest link, and under the effective direction of the members of the engineering staff, excellent results were obtained, as shown on chart (Fig. 2). The task for Sterling plant was set by us at 72 per cent average annual efficiency, and the actual record shows that 72.4 per cent was maintained, with only moderate fluctuations from month to month. The lowest figure on record, that for the month of November, being still as high as 70.9 per cent. The history of this instance is of great interest; practically no investment was required to bring about the uniformly high efficiency, except a moderate consulting fee. Our cobweb chart (Fig. 2) pictures the gradual development of this plant's efficiency. From June, 1925, to June, 1926, the plant was operated by the regular force in the usual manner, reaching only once during that year 68.7 per cent efficiency and averaging only 63.9 per cent. During the year from June,

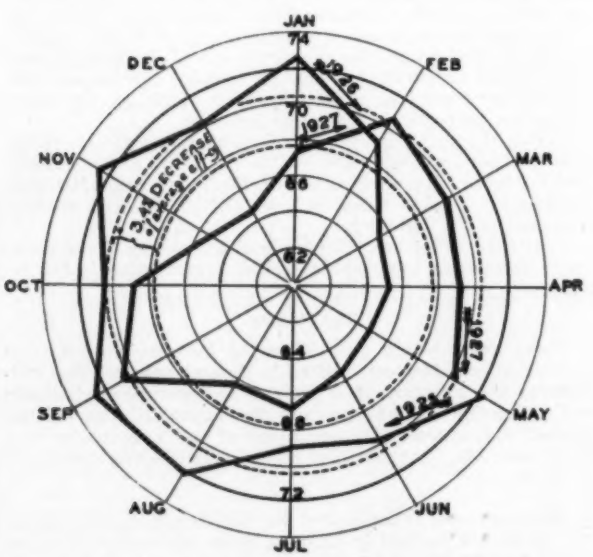


Fig. 1—Record of boiler efficiency at the main boiler house. Note the irregularity and gradual deterioration. Champion Fibre Company, Canton, N. C.

Fig. 2—Record of boiler efficiency at Sterling boiler house. Note rapid improvement and uniformly high efficiency resulting from practice of recommended method

1926, to June, 1927, the plant was operated at 72.4 per cent efficiency, i. e., 13.3 per cent more economically.

The means recommended by us were substantially managerial, covering

1—Installation of instruments permitting intelligent guidance in work and training of men.

2—Inauguration of adequate, immediate, and accurate records to stimulate interest and to guide the work.

3—Discontinuation of inappropriate bonus scheme based on gas analysis and ash composition, the effect of which, due to its inaccuracy and unfairness, was negative.

By these means, the cost of steam was brought down materially. On the other hand, the main boiler house, with its fairly absolete equipment, was not deemed worthy of special managerial attention, and our methods were not applied in that boiler house, with the result that its former efficiency of 70.2 per cent was allowed to deteriorate to 67.9, as shown on Chart (Fig. 1). In other words, whereas the application of more modern methods of boiler room management increased efficiency in one plant by 13.3 per cent, the lack of application of the same measures resulted in the drop of efficiency by 3.4 per cent in another.

Features of the Project

Such was the situation when the company was confronted with a three-cornered problem. First to reduce their electrical bill for purchased power, second to increase its operating economy and efficiency, and third to accomplish this without a loss of exhaust steam, the demand for which was practically well balanced with the existing equipment.

The opportunities presented by a proper solution of this problem were over $100,000 saving on the annual electrical bill, and nearly the same amount on the total fuel bill. A thorough investigation of the elements involved was entrusted to us by the president of the corporation, and upon completion of the study toward the end of 1926, the conviction was formed that the results sought could be accomplished at an expenditure permitting full amortization in about two years, with engineering means both simple and proven. Our project, therefore, was submitted, and upon its comparison with two other projects independently made by other parties, our project was substantially accepted, and, with minor modification at the time of letting the bids, with our counsel, accepted. The plans and erection were executed by the client's own engineering department, with the usual aid from the contractors and manufacturers of the equipment, and actually put in service in the fall of 1928.

Fig. 4—Front of Boiler erected by Combustion Engineering Corporation at Champion Fibre Co. plant

The substance of the plan recommended was to superimpose upon the existing boiler plants a steam generating unit of higher pressure and higher superheat. (Fig. 3). This steam would drive a turbine of adequate capacity to replace the demand for purchased power. The steam thus utilized in the generation of additional electric current was then to be extracted and utilized to drive the generating machinery in the existing engine room, as a second stage, at a reduced pressure, and safely reduced superheat, upon which the exhaust would become available for processes, as previously.

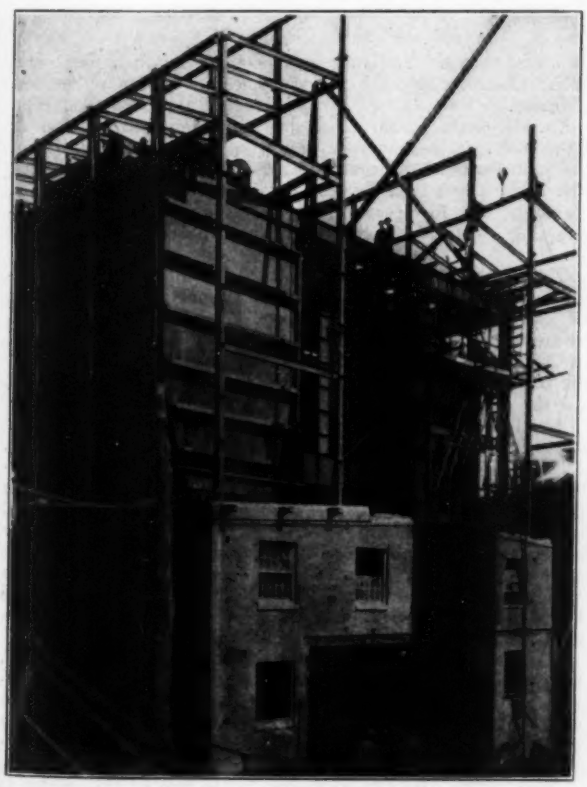


Fig. 3—Heine VX Type boiler, 450 lb. pressure, 600° superheat in course of erection

Fig. 5—Inside view of the furnace for pulverized coal burning, water cooled by finned tubes

This plan would involve a generation of about 200,000 lb. per hr. of steam in the new unit at 400 lb. pressure, 700° F. total temperature, to operate the new 4000 kw. A. C. turbine. From this unit about 196,500 lb. of steam, at 175 lb. pressure could be extracted, which, with proper reduction of the superheat, would make the quality of steam available for the

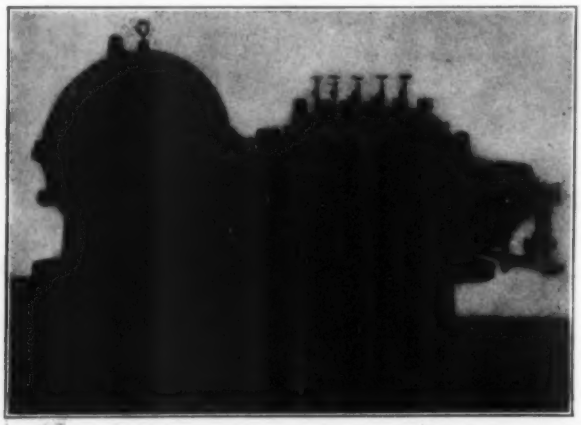


Fig. 6—Five-stage, Cameron, feed water pump, D. C. to Terry high pressure steam turbine

operation of the old power generating machinery, thus completing the cycle, being turned into existing low pressure steam lines. The balance of steam is exhausted from reaction stages of the turbine at the 20 lb. back pressure, and, since the existing reciprocating engines all exhaust also at 20 lb., the present steam piping for distribution and utilization of the low pressure steam are thus joined, and close the second cycle.

Under such operating conditions where the 400 lb. pressure steam would not be available, the same turbine can be run with the steam generated in the main boiler house in old boilers at 175 lb. pressure, feeding the turbine at the point of bleeding stages, thus lowering its thermal level accordingly.

In this manner, with normal operation, the thermal efficiency of the plant as a whole is high. Minimum physical alterations are required, and maximum flexibility is attained.

It would be beyond the scope of this account to discuss the thermo-dynamic and economic pros and cons for selection

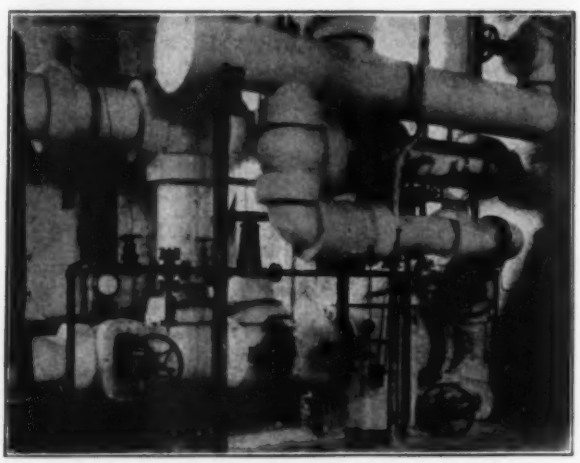


Fig. 8—24" Elliott desuperheater, pipe connections, control and instruments

of this or that type and make of equipment, or even to present the arguments for and against the pressure-temperature cycle chosen. These matters are, of necessity, determined by individualities of existing portions of the plants, etc., and in final counts are to be weighed against the nature of the manufacturing processes and the financial conjunctures of the market.

New Equipment

It will not be without some interest, however, to sketch briefly the general specifications of additional equipment installed.

Boiler: Heine, VX Type, five-drum, with Elesco desuperheater of intertube type, radiant and convection, and economizer built integrally. The heating surface of the boiler is 24,390 sq. ft., consisting of 301-3" tubes and 960-2" tubes, with economizer containing 512 tubes, 2" diameter.

Pulverized coal equipment consists of three Raymond pulverizers, hammer type, of 12,000 lbs. per hr. capacity, and the coal is handled by Jeffrey V-bucket conveyor, and elevator from the crusher to pulverizer, and weighed by Richardson

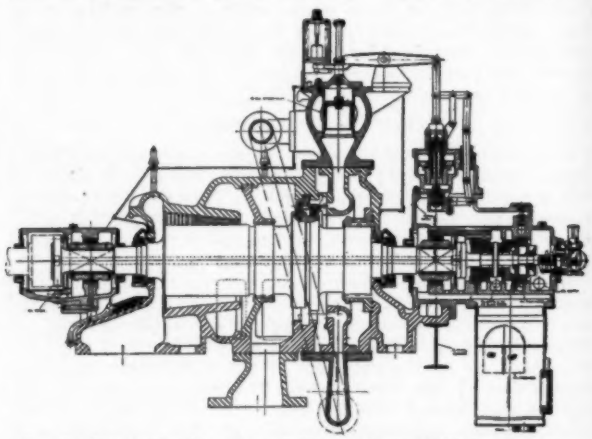


Fig. 7—Longitudinal section of Westinghouse 4000 kw. bleeder, non-condensing turbo-generator unit designed for 450 lb. steam pressure, 250° superheat, bleeding at 175 lb. and exhausting at 20 lb.

automatic scale. The coal is fired by six Couch horizontal burners, each pair of burners connected to one pulverizer. (Fig. 4).

Forced draft is furnished by American Blower fan of 109,000 cu. ft. per minute capacity, and induced draft, of the same company's make, of 285,000 cu. ft. per minute. The fans are driven by Sturtevant turbines, operating on steam of 400 lb. pressure, as delivered by boilers, and exhausting either at 130 lbs. back pressure or 25, as need may be.

The furnace equipment is typical of Combustion Engineering installations, with the rear-end arch protected by fin tubes, as well as each side wall. (Fig. 5). The ash pit is protected by the water screen, and the ash removal equipment consists of Allen-Scherman-Hoff Hydro-jet. Primary and secondary air for the furnace is preheated to a temperature of 300° F. for the service load of about 200 per cent rating.

The two feed water pumps are of 750 gallons per minute capacity, and furnished by Cameron Steam Pump Company. These five-stage pumps are direct connected to Terry turbines, 400 horsepower. (Fig. 6). These turbines, like the fan turbines, operate on steam as delivered from boiler, and likewise exhaust against 130 or 25 lb. back pressure. The exhaust, however, may also be utilized for heating feed water at 5 lb. back pressure. The additional nozzles on these turbines are installed to secure higher efficiency with the load even at 50 per cent. About 50 per cent of feed is a make-up which is treated by zeolite (Permutit) process.

The electric generating equipment consists of a 4,000 kw., 80 per cent power factor, Westinghouse A. C., direct connected to a parallel flow type bleeder turbine, operating at 400 lb. pressure, 700° temperature steam. (Fig. 7). The excess of superheat in bled steam is reduced in the cartridge type Elliott desuperheater with coincident increase of steam volume. This arrangement permits the use of this steam to operate the old equipment in the existing engine room.

In the eventuality of operating the high pressure boiler

without the opportunity to utilize the 400 lb. pressure steam in the new bleeder-exhaust turbine, the steam can be delivered through a 10" line to the Locke regulating valve. Thus the pressure may be reduced to 175 lb. and thence conveyed through a 12" pipe line to the Elliott desuperheater and so made available for such uses as supplied ordinarily by the existing 175 lb. pressure lines. The desuperheater and pipe hook-up is shown in Fig. 8. Failure of the reducing valve is

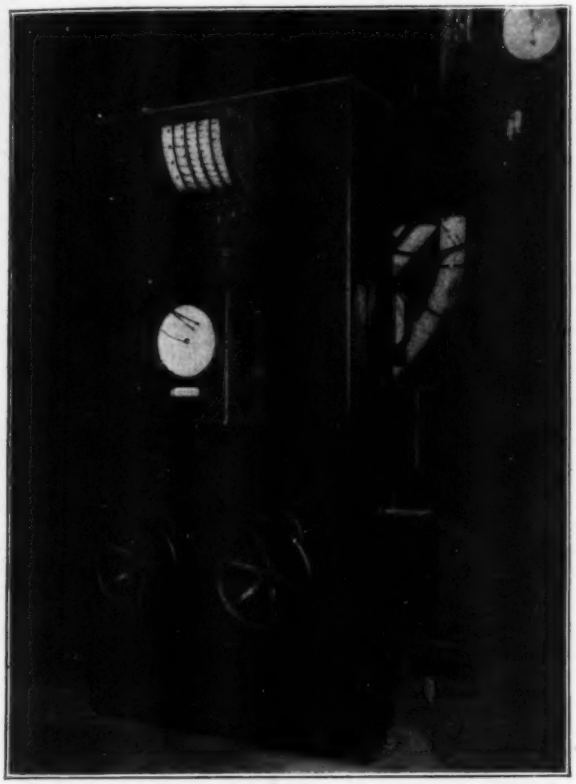


Fig. 9—A typical Bailey meter control board for pulverized coal burner installation with multiple draft gauge, steam-flow, air-flow recorder and integrator and regulating control

guarded against by a 12" safety valve, while the temperature of desuperheated steam is controlled by an S-C regulator controlling hot water injection.

The principal instrument equipment consists of Republic Steam Flow Meters on the auxiliary turbines, Bailey steam-flow air-flow and temperature recording instruments (Fig. 9) and the Republic CO_2 instruments.

Operating Data

The performance data as made public for November 16, 1928, indicate the following averages:

Flue gas entering air heater	450° F.
Air leaving air heater	400° F.
Flue gas entering chimney	360° F.
Steam leaving superheater	610° F.
Feed water	208° F.
Steam pressure	400 lb./sq. in.
Carbon dioxide in flue gas	14%
Average coal consumption per hr.	23,000 lb.
Average steam generated per hr.	256,700 lb.
Evaporation per 1 lb. of coal as fired	11.16
Heating value of 1 lb. of coal as fired	12,850 B. t. u.
Overall efficiency	84.3%

Inasmuch as our project was based on the predicated economy at 84 per cent efficiency, the plan, as carried out, justifies the expectations.

Such are, in the main, the high spots of this interesting modernization of the power plant of the company, considered the largest of its kind in the world.

Secretary Jardine Issues Statement on Deforestation Problem

The grave consequences of continued deforestation make it imperative that the Federal Government, the States, and the timberland owners join co-operatively in a more positive and aggressive effort to end the evils of forest devastation, according to a statement by Secretary of Agriculture Jardine made in connection with comments on a pamphlet "Deforested America," written by Maj. George P. Ahern, formerly Chief Forester of the Philippines and one of the earliest exponents of modern forestry in the United States—a pamphlet widely circulated by ex-Governor Gifford Pinchot of Pennsylvania, who was Chief Forester during the Roosevelt administration.

Pointing out the progress thus far made in the co-operative forestry movement, Secretary Jardine expressed the belief that co-operation between government and industry is applicable to the forest situation on a much larger scale than it has hitherto been applied, but stated that if the co-operative method proves inadequate, national security will require that it be supplemented or supplanted by more drastic measures.

Although expressing the view that the forest situation is far from satisfactory and that forest destruction is widespread, Secretary Jardine pointed to the progress made in forestry, especially under the co-operative forest fire control program of the Federal Government, the States, and private land owners. In this program, both the States and many private land owners have worked loyally with the Department of Agriculture, said the Secretary, and progress is being made by some of the more progressive lumber companies and land owners in the adoption of other improved forest practices besides fire protection.

"The Department of Agriculture is interested in the forest problem not only as a matter of timber supply, but as a matter of productive use of land," the statement continues. "One-fourth of our total land area is better suited physically and economically for forest production than for any other purpose, and the continued deterioration of this vast resource is adversely affecting agriculture as well as every other line of industry."

The Secretary pointed out the large responsibilities with which his department is charged in the forest enterprise as a whole. It administers the national forests, participates in a large program of forest land purchase, is responsible for much research in forestry and forest utilization, and administers the extensive Clarke-McNary program of co-operation in forest fire control and other phases of forestry with the States and private forest owners.

Forestry College Adds Timber Treating Plant

The latest type of experimental timber treating plant will be added to the dry kiln and sawmill equipment at the New York State College of Forestry, Syracuse University, announces Dean Franklin Moon.

The Dean said, "From an obscure beginning, the wood preserving industry of the United States has now attained an important and recognized standing. In 1927, with 187 treating plants in operation in the country, more than 345,000,000 cubic feet of wood were treated with preservatives. The increased length of life which can be expected from this material represents an annual saving of $175,000,000 to $180,000,000. This is practical conservation and represents good forestry practice. It is a benefit both to the industry and to the nation.

"Some years ago the New York State College of Forestry established in the curriculum a lecture course on the subject of wood preservation. In 1925 this course was revised and extended.

"The installation of the preserving plant," said the Dean, "will make possible a still more thorough course and will aid greatly in research work. With this new equipment it will be possible to demonstrate to the students in a practical way the methods of preserving wood against the attack of insects, fungi and other deteriorating agencies. Assistant Professor George P. Kramer, who has had several years of practical experience in timber preservation and who is a member of the American Wood Preservers' Association, is in charge of the course."

Refractories in the Paper Industry

Brick Making Under Scientific Control in Laboratory of General Refractories Company

IN VIEW of the extent to which refractory materials like firebrick are used in pulp and paper mill operations—in chemical pulpmaking processes as well as throughout the power end of the industry—it is a little astonishing that more is not known concerning the composition or characteristics of these articles.

There are several places and pieces of equipment in a pulp and paper plant which are constantly exposed to extreme degrees of heat or of the corrosive action of chemical vapors or solutions, and where lining materials must be employed which are capable of withstanding continued exposure to these high temperatures and the action of acid liquors.

The major uses for refractory brick are as linings for boiler furnaces, black ash smelters and for sulphite digesters. Seeing that power plants in pulp and paper mills function twenty-four hours a day, the linings for boiler furnaces come in for special consideration.

Pulpmaking equipment in which refractory linings are used are represented as stated by the sulphite digesters and by the combustion chambers in sulphur burners for the production of sulphur dioxide gas. Refractory brick is also employed in Jenssen acid towers and in the accessory equipment of Barker milk-of-lime systems. The smelters used in the manufacture of kraft pulp require a highly resistant type of lining if they are to withstand for any length of time the combined heat and corrosive action involved in the recovery process, while the rotary incinerators employed both in soda and sulphate pulp mills must also be lined with a material strong enough to resist high degrees of temperature and the corrosive action of chemical vapors. In the case of smelters the lining constitutes perhaps the most important part of the installation because it is exposed to a temperature around 2,000° Fahr. The preferred materials are resistant firebrick and soapstone. An ordinary lining of the usual refractory brick composition has a life of about six months, but this can be greatly extended by the selection of more durable material.

Notwithstanding the important part played by fire resistant brick in pulp and paper mill work, the subject is one that has received only scant attention from committees of the technical associations who devote their attention to subjects pertaining to heat and power. The only discussion of the subject before associations of the paper industry that we can recall was the talk on digester bricks given by A. G. Richter, of the Stebbins Engineering and Manufacturing Company, at the Detroit meeting of the American Pulp and Paper Mill Superintendents Association in 1926.

On a recent visit to Baltimore, the writer, who has had many years experience with pulp and paper operations, was impressed with the significance of science in the manufacture of refractories. There he had the privilege of inspecting the laboratory of the General Refractories Company and the adjoining works for the production of chrome and magnesite bricks. These works represent but one of some fifteen manufacturing units of the company distributed through preferred raw material districts. Every type of refractory brick made in these factories, which have a capacity of upwards of 1,000,000 bricks a day, are under laboratory control, all of the plants being operated on a control basis, from raw materials to finished products.

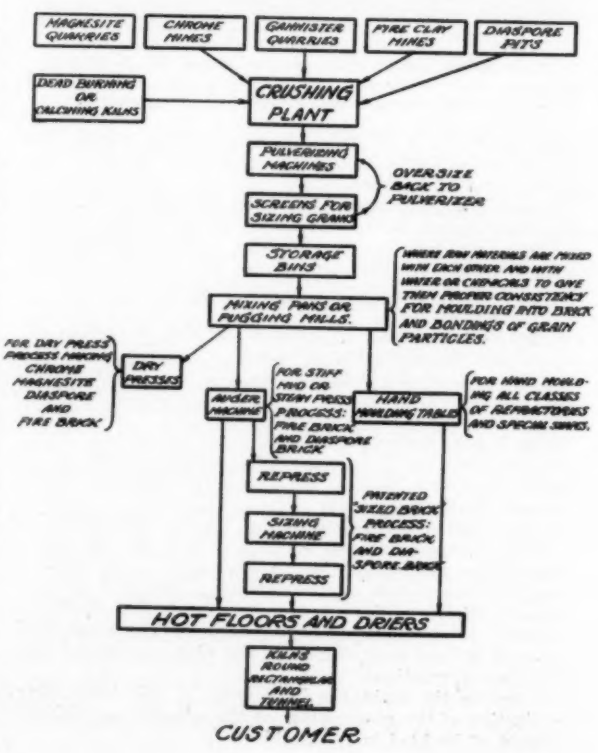
A laboratory for the technical control of the manufacture of refractories differs from any other type of chemical laboratory. The equipment comprises varied machinery and apparatus of the heaviest as well as the most delicate types, making it possible to duplicate actual plant operating conditions throughout a given test. A portion of the first floor of the building in which is located the process laboratory, is given up to a petrographic department for the microscopical examination of brick sections, special grinding apparatus being used to produce a transparent shaving or section of the hardest and heaviest refractory brick.

The general chemical laboratory on the second floor did not appear to differ in any particular way from the customary layout of any chemical laboratory, there being the usual array of benches with reagents, wash bottles, sinks and drains, work tables, and a balance room, also a fuel testing room and in the center of the main laboratory a work table with fume hood.

The building is a two-story brick structure and facilities are provided in it as already mentioned for conducting plant scale tests after they have passed the laboratory stage. We were greatly impressed with the equipment of the process laboratory and especially with the machinery and hydraulic presses for small scale manufacture of full size experimental refractories. L. J. Trostel, the chemist in charge, who is an enthusiast in his work, showed us many courtesies and took evident pleasure in explaining the manner in which the laboratory serves in research, operating control, sales help, as well as in process and product development. A laboratory of this kind is a comparative novelty among the manufacturers of refractories and it is no doubt one of the finest ceramic laboratories in the United States.

Under the expert guidance of J. C. Hanawalt, manager and superintendent of the Baltimore works, a visit was paid to the brickmaking part of the plant where all of the

FLOW SHEET SHOWING MANUFACTURE OF REFRACTORIES


MAGNESITE QUARRIES
CHROME MINES
GANNISTER QUARRIES
FIRE CLAY MINES
DIASPORE PITS
DEAD BURNING OR CALCINING KILNS
CRUSHING PLANT
PULVERIZING MACHINES
OVERSIZE BACK TO PULVERIZER
SCREENS FOR SIZING GRAINS
STORAGE BINS
MIXING PANS OR PUGGING MILLS.
WHERE RAW MATERIALS ARE MIXED WITH EACH OTHER AND WITH WATER OR CHEMICALS TO GIVE THEM PROPER CONSISTENCY FOR MOULDING INTO BRICK AND BONDING OF GRAIN PARTICLES.
FOR DRY PRESS PROCESS MAKING CHROME MAGNESITE DIASPORE AND FIRE BRICK
DRY PRESSES
AUGER MACHINE
FOR STIFF MUD OR STEAM PRESS PROCESS: FIRE BRICK AND DIASPORE BRICK
HAND MOULDING TABLE
FOR HAND MOULDING ALL CLASSES OF REFRACTORIES AND SPECIAL SHAPES.
REPRESS
SIZING MACHINE
REPRESS
PATENTED SIZED BRICK PROCESS: FIRE BRICK AND DIASPORE BRICK
HOT FLOORS AND DRIERS
KILNS ROUND RECTANGULAR AND TUNNEL
CUSTOMER

operations of grinding, moulding and firing the brick were witnessed. The accompanying flowsheet of operations gives a graphic representation of the processes employed.

Dr. R. P. Heuer, director of research, of the General Refractories Company, in enumerating the various kinds of refractories manufactured, made the following recommendations for their use in pulp and paper plants. In sulphur burners high grade flint clay bricks of the type of Wynn, Hayes, Run, Beech Creek and Olive Hill, the names representing the commercial brands. For rotary incinerators in the soda process Wynn, Olive Hill, and Arco bricks are recommended, and the same holds good for the recovery process in sulphate work, so far as the rotary incinerators are concerned.

For soda and kraft smelters a more resistant type of brick is indicated, chrome brick being prescribed for the bottom and side walls, and Beech Creek Roof Brick protected with Grefco chrome cement for the arch.

As furnace linings in boiler plants Olive Hill or Wynn sized fireclay brick is especially suitable and highly recommended, and it is urged that all brick whether sized or produced by the General Refractories Company's handmade or dry pressed process, be laid up in Grefco chrome cement, except in the digesters, where, of course special acidproof cements should be employed.

An Oval Tube Sectional Air Heater

An advanced type of air heater, known as the Shaw-Perkins Oval Tube Air Heater, which embodies several new and interesting features, has recently been placed upon the market by Shaw-Perkins Manufacturing Company, of Pittsburgh, Pa.

The heater is for installation in the flow line of waste flue gas, as in the boiler plants of paper mills. It offers a high investment return in its unusually effective recovery of the valuable heat usually lost in boiler stack gases. The re-

claimed heat may be returned to the furnace as preheated combustion air or may be used for building heating, fog removal, prevention of wall and roof condensation and drippage, and for paper drying.

The heater comprises an ingenious assembly of standard Shaw-Perkins heat exchanging elements which the Company has manufactured extensively for some years. The use of this stream line oval tube surface keeps the draft loss low and the heat recovery high. The heaters are equipped with rotary steam soot blowers, which remove soot accumulation more quickly and thoroughly than is ordinarily possible.

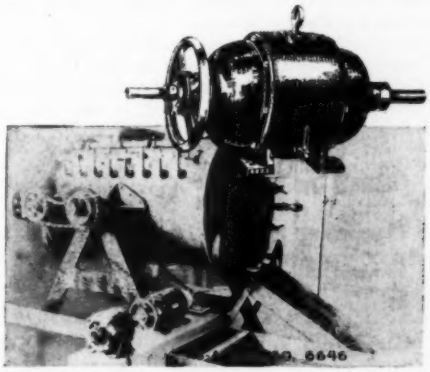
The heating surface in the heater is sectional, as will be seen in the accompanying illustration, and the sectional heating elements can be installed or removed from either side of the heater without disturbing air or gas passages.

The heating elements are made in four header widths of ten lengths each, a total of forty different sizes. The large number of element sizes, together with the numerous possible assembly arrangements, provide an infinite range in heater dimensions and capacities.

A new descriptive folder has just been issued, which explains these and other features, and a free copy may be obtained by addressing the manufacturer.

A Gearless Variable Speed Transmission

Where speed variations are necessary while machinery is in motion, such as on paper converting machines for various purposes, the gearless variable speed changing device known



as the JFS variable speed transmission, manufactured by the Stephens-Adamson Manufacturing Co., Aurora, Illinois, combines desirable features.

It performs the primary function of receiving power at constant high speed and delivering the same power at a reduced speed for the direct operation of the driven machine. The rotation of the low speed shaft can be increased or decreased over a wide range, smoothly and under positive control of the operator, by simply turning a small hand wheel either while the machine is at rest or in motion.

The mechanism is totally enclosed in a dust-tight housing and operates in a constant bath of oil. The whole unit occupies no more space than the electric motor to which it is attached and because it operates without gears it is just as quiet as the motor.

As shown in the illustration, the JFS transmission is similar in appearance to a totally enclosed electric motor. The smaller shaft extending to the left is the input (or constant speed) shaft which in most installations is connected directly to a motor through a flexible coupling. The output or variable speed shaft shown extending to the right is either connected directly to the driven machine or is equipped with an outboard bearing and drives by means of a sprocket, gear or pulley. The wheel shown at the left of the housing is the speed control wheel. By turning this wheel in either direction, the speed of the output shaft may be increased or decreased.

The standard machines are made in sizes to transmit ½ to 15 hp. at the maximum reduction and will provide a range of speed variation of about 5 to 1. For example: If the input speed is 1800 r. p. m., the output shaft will have a maximum speed of 1000 r. p. m. and a minimum speed of 200 r. p. m. The speed variation is without interruption and is of especial value where a smooth control regulation is desired.

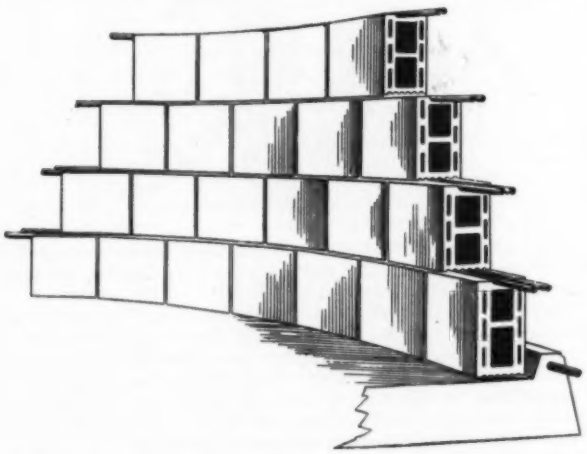
Announcement is made of the election of Carl F. Weigel as vice president and general manager of Hedges-Walsh-Weidner Co., Chattanooga, Tenn., a subsidiary of Combustion Corporation of America. Mr. Weigel was for a number of years chief engineer of the Walsh & Weidner Boiler Company. From the date of the combination of this company with the Casey-Hedges Company, Mr. Weigel has served as chief engineer of the combined organization.

Glazed Tile Tanks for Pulp and Paper Mills

PULP and paper making, because of the nature of various manufacturing operations, entails the use of many specially designed tanks. The tanks may serve in the capacity of processing equipment, in the production of various chemical preparations for use in process operations, or for storage purposes.

Blow pit and bleach tank installations would serve as an illustration of tanks used as process equipment; while cauticizing tanks, size tanks, etc., illustrate tanks employed in the preparation of various chemicals for use in processing both pulp and paper. The third classification, tanks for storage purposes, might be illustrated by citing such tanks as acid storage, black liquor, bleach liquor, beater chests, jordan chests, machine chests, etc.

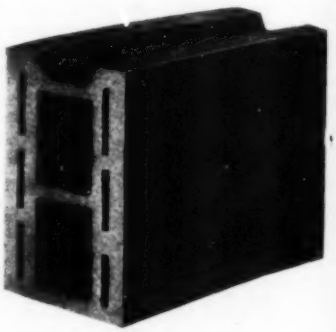
A number of different construction materials have been used in the production of the wide variety of tanks required by the industry. Wood tanks, steel tanks, concrete tanks, special metal tanks, etc., are found in use throughout the entire industry. Tank manufacturers have specialized in the design and construction of tanks to meet the special requirements of the pulp and paper industry.



Method of constructing tank from tile—note bottom of tank with reinforced shoulder and reinforcing hoops embedded in mortar joints

A wood tank manufacturer has been developing, during the past five or six years, tanks made from highly vitrified, glazed tile for use in pulp and paper mills. Installations of glazed tile tanks during this development period include stock chests of various kinds—beater chests, jordan chests, machine chests; as well as bleacher unit, hot and cold water storage, and ash storage installations.

The construction of these tile tanks is said to be a simple masonry job, and can be accomplished by any competent mason. The tile blocks used in the construction of the tanks are of uniform size—12" long by 10" high and 6" wide. The blocks are curved to proper circle for varying diameters when round tanks are being constructed. Likewise, the blocks are designed with a special groove on the top side to admit reinforcing rods in the construction.



Glazed tile block—note groove in top side to permit embedding of reinforcing rods

Construction Principles

In constructing a tile tank, the floor is poured of concrete to the desired thickness. A small reinforced shoulder or its equivalent is left on the outside of the bottom row of tile, and the tile is laid with grouting between the outside face of the bottom row of tile and the inside of the reinforced concrete shoulder. In some cases it might be possible to start the tanks upon already existing floors. In other cases it would be best to form the bottom of the tanks above the floor upon which they are to be located.

The tile blocks may be set in either a cement or lime mortar. Sometimes a waterproof cement may be used. The use of litharge for pointing up the joints might also be desirable. The service in which the tanks are to be placed would determine to some extent the care required for setting and the cementing materials used.

The special groove in the top of each block makes it possible for reinforcing rods to be embedded in the mortar joints. The number and size of the reinforcing rods used would be determined by the size of the tank installation. This type of construction completely conceals the reinforcing rods and eliminates any possibility of rust coming in contact with the material contained within the tank. This method of binding the tile blocks together with reinforcing rods might be said to be comparable to the method employed in binding the flybars of a beater roll together in the case of the banded roll.

While the weight of the tile block used in the construction of these tanks is only 40 per cent of the weight of a monolithic concrete wall of the same thickness, each block will withstand a crushing load of 2000 pounds to the square inch. Such strength permits agitator equipment or other

Two 12'x11' stock chests in board mill

necessary machinery to be built into the sides of the tanks or bolted to the tops of them.

Although round tanks are most commonly used, square or rectangular tanks have also been erected. In the case of the square or rectangular tanks, tile blocks of different size than those previously mentioned are used in the construction. Blocks 5″ × 8″ × 12″ or 5″ × 4″ × 12″ are used for the square or rectangular tanks. Likewise, special corner tiles are provided to assure properly broken joints.

The size of tanks erected and in service varies over a wide range. Three 20′ × 15′ tile tanks are employed as stock chests in one plant, while at another mill one of the tile stock chests is 14′ × 9′. In a third plant, a tile chest 15′ 1¼″ in diameter and 22′ high has been installed to handle stock from a Fletcher bleacher. The bleacher unit in the same plant has been made of tile blocks. This unit is 10′ in diameter and 12′ 8″ high. The bleacher unit has been made with a hemispherical bottom, while the stock chest used in conjunction with it was constructed with a conical bottom. A tank 24′ in diameter by 20′ high was installed in one plant for hot water storage. In this installation, waterproof cement was used to lay up the tile, and the tank was lined or plastered inside with a ½″ coat of cement. Cold water storage tanks of tile have been installed without the cement lining.

Clean and Enduring

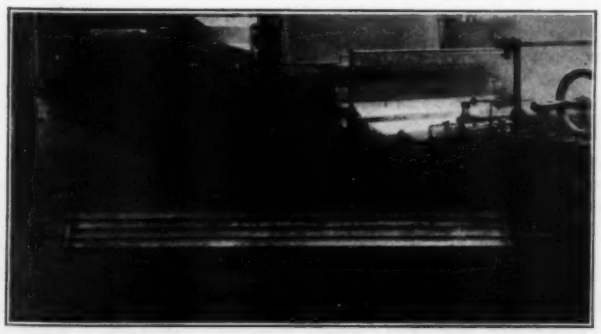
Tanks made from tile blocks are attractive. They are smooth on the outside as well as the inside. When used as stock chests, they are easily kept clean, and offer no source of dust or dirt to cause trouble in the finished paper. Likewise, because of the smooth finish, these tanks offer little opportunity for the formation of slime deposits.

Most of the installations to date have been made for handling stock. It is said that these installations have been made at a cost much less than would be required for concrete construction and a little less than would be required for three inch cypress construction. Likewise, it is claimed that the tile tanks with steel-reinforced masonry construction have been built to endure since this construction is permanent.

Future installations of these tanks may include even a more wide spread use in the industry. Recommendations will come from further investigations.

New Type of Suction Box for Paper Machine

A new type of slotted suction box has been in use for several months on a number of the paper machines of S. D. Warren and Company at Cumberland Mills, Me. It was designed and patented by Mr. A. Lewis of that company and it has now been in service long enough to prove its worth.



View of suction box ready to be installed in paper machine. Strips are in place. They are loosened by turning the hand wheel and can be removed and replaced with fresh ones without taking the box out of the machine or stopping it

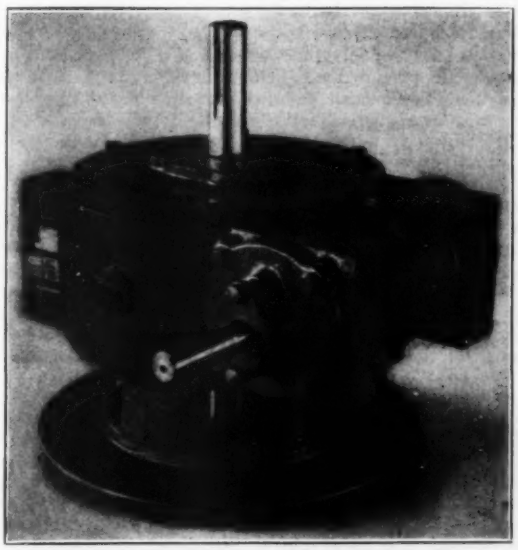
The great advantage of this device lies in the fact that the inner strips of wood may be withdrawn and replaced with others freshly dressed without removing the whole box from the machine. That this means a reduction in cost of maintenance and improved continuity of production will be readily realized.

It takes only a few minutes to make the change and the ease with which it is done is shown in the illustration. This also means that it is a simple matter to keep the suction box in the best of condition at all times as it is not necessary to wait until it is convenient to stop the machine, if such a time ever really occurs.—F. A. Westbrook.

View of suction with strips removed

A Vertical Speed Reducer

A standardized vertical speed reducer known as the type-V, has been designed by the Boston Gear Works, Norfolk Downs, Mass., for use on mixers, agitators and wherever else a vertical shaft speed reducer is required. It can be conveniently fastened on the top of a machine, on a wall, or to the floor, and is designed so that the driven shaft can project above or below, or both.



The type-V speed reducer is equipped throughout with Timken tapered roller bearings, and is fitted with high-grade phosphor bronze worm gears. The steel worms are hardened with threads ground and polished. The shafts are of high-grade steel. The special oil-tight construction prevents any oil leakage.

Ratios are obtainable that make these reducers suitable for transmitting light and medium loads.

The demand for Brown instruments and the rapid increase of business in the New York area has necessitated the removal of the New York office of The Brown Instrument Company to larger quarters to provide for the increased staff now attached to that office. The company is now located at Room 1502 Roebling Building, 117 Liberty Street, New York City.

Charles A. Daniel, president of the Quaker City Rubber Company, Philadelphia, Pa., passed away December 24, 1928 at his home in Philadelphia.

Printers' Troubles With Paper

Secret of Success in Printing Lies in Regulation of Relative Humidity in the Press Room

DURING the week of the Power Show in New York, the American Society of Mechanical Engineers held technical sessions and conferences daily, every hour of the day, from 9:30 A. M. to 5:30 P. M. and later, being occupied in this way with professional sessions and committee meetings for the presentation and discussion of papers and reports.

The Printing Industries Division of the association arranged a symposium on "Paper and Ink as the Raw Products of Manufacture and the Conditions that Affect Them," and at this symposium, which was conducted by John Clyde Oswald, managing director, New York Employing Printers' Association, Otto W. Fuhrman, chairman of the Educational Commission of the International Association of Printing House Craftsmen, discussed some of the troubles of the printer in the handling of paper.

Paper of Unchanged Basic Properties

After referring to the early processes of papermaking in the Far East and Europe, he said that paper has the same properties today that it had 500 years ago, for though refinements have been made in details of manufacture there has been really no basic change in the product. The fibrous nature of paper was the same whether it was a wasp's nest, an Egyptian papyrus, an Oriental print, or any of the modern papers, either hand or machine made.

Mr. Fuhrman will be recalled pleasantly by all who attended the annual meeting of the American Paper and Pulp Mill Superintendents' Association in Pittsfield, Mass., last year, when he presented a paper on the "The Printers' Problems with Paper." On the present occasion his audience was made up chiefly of engineers and printers, who listened with interest to his statements concerning the influence of weather and atmospheric conditions on the behavior of paper in the press room.

Reason for Paper's Instability

Mr. Fuhrman pointed out that paper owed its existence to the tendency of vegetable fibers to curl when wet and to adhere to each other in an irregular, interlocking manner, called matting or felting. It was this characteristic of paper that made for its instability under changing atmospheric conditions, seasonal and climatic, no matter how far its finishing processes may be carried. The secret of uniformity in printing on paper consists in the proper regulation of relative humidity in the pressroom, Mr. Fuhrman said. Paper comes from the mills with a certain amount of moisture in it, ranging from 4 to 6 per cent and if this moisture content could be maintained uniformly there would be no trouble.

Problem Did Not Exist in Early Days

Regulation of humidity in the press room is not as well understood as it should be. Down to a recent period paper was dampened before it went to press and this made it pliable so that the impression was taken with elastic pressure. But printing methods have changed greatly of late. Halftone illustrations now require paper with a smooth, glossy surface, hard packing on the presses, and a 'kiss' impression. Speed and register requirements have also changed the method of sheet feeding from the needle points in the center to guides on the outside edges. All this meant the end of dampened paper in print shops, after more than 400 years of use, during which the humidity had never figured in the calculations of printers.

While the mechanical side of printing has grown more and more complicated, new problems arising with new appliances, so strong is craft habit, that printers generally refuse to recognize the importance of humidity regulation as a factor in the proper handling of paper to get good results in printing.

Printers' Troubles with Paper Analyzed

Mr. Fuhrman reviewed some of the main causes of complaint with regard to printers' troubles in press rooms and, in an attempt to analyze them, enumerated the characteristics of unseasoned and seasoned papers, as follows:

(A) Unseasoned Paper—

1—Fresh from the mill, or "green", and therefore showing a tendency either to stretch or shrink, thereby making register impossible.

2—Brought from cool storeroom into heated pressroom, paper loses its flatness and will curl along the edges, become wavy all over and cause wrinkles in printing aside from register trouble.

(B) Seasoned Paper—

1—Tendency to develop static electricity by friction (fanning, combing by hand or feeding machine, contact with tapes, rollers, and brushes), with these results:

(a) Sheets are hard to separate;

(b) Printing on first side is scratched when feeding on the back-up;

(c) Sheets stick together on the delivery pile in the position they fall, and ink offsets either by exclusion of air or by too close contact or by mechanical rubbing caused by the joggers.

2—Ink is not taken readily—leading to offset.

3—More than normal pressure is required—leading to offset.

4—Cracking on fold, especially across grain.

5—Tendency to stretch.

6—Tendency to curl, wrinkle, and pick.

7—Slow drying of ink.

Mr. Fuhrman said that the foregoing did not represent all of the possible troubles. Those listed under (A) occurred in all seasons, while those under (B, 1 to 4,) were common to the winter season, (5 to 7 under B) being more noticeable in the summer season when excessive humidity prevailed.

Need of Careful Wrapping

The importance of wrapping and packing paper carefully at the mill in order to protect it from atmospheric changes in transport was emphasized. Much of what he said concerning the relation between humidity and temperature was of equal interest to mill men as printers. It was to the advantage of the printer to insure a reasonable amount of humidification in the printing plant. With proper humidity conditions static electricity would not develop and less ink would be used, with correspondingly improved drying and less offset, meaning cleaner printing and larger production.

Meaning of "Relative Humidity"

In explanation of the term "relative humidity," Mr. Fuhrman made the following statement:

The words "dry" and "moist" applied to atmosphere have a purely relative significance depending upon the temperature. They involve a comparison between the amount of water vapor actually present and that which the air could hold if saturated at the same temperature. The ratio of these two quantities is called "relative humidity." When we say "a relative humidity of 65 per cent," we mean that the amount of water vapor actually present is 65 per cent of what the air might have contained at the given temperature of, say 70 deg. if it had been saturated.

It would be very easy for any printer to take a series of

readings around his printshop and record the variation in temperature and relative humidity. It would be interesting and enlightening to many to see the variation in the amount of water in the different rooms. The following table records the measured humidities in various parts of a paper mill:

	Temperature deg. fahr.	Relative humidity, per cent
Office	80	36
Outdoors (dry day)	84	37
Cellar	71	64
Outdoors (rainy days)	73	73

This affords an excellent illustration of the increase in humidity on lowering the temperature of the air, and also of the variation with the weather.

At various relative humidities paper holds different percentages of water and will absorb or give up water until it comes to equilibrium with the existing temperature of the room. The following tabulation will illustrate this:

At 70 degrees Fahrenheit

Relative humidity, per cent	Moisture in paper, per cent
100	21.5
90	13.5
80	8.9
70	8.4
60	6.5
50	5.6
40	3.4
30	2.3
20	1.8

During the winter humidity conditions in the pressrooms are particularly bad, for while the average outdoor humidity may be fairly high (50 or 60 per cent), the small amount of moisture contained in the air at the low temperatures encountered during the winter months causes a serious reduction in relative humidity on being heated inside the building. As an example to illustrate this point, the air at 40 deg. and 50 per cent relative humidity, which are normal winter conditions, contains but 18 grains of moisture in a pound of dry air. On heating such air to 75 deg. without changing the actual amount of moisture present, the relative humidity has been reduced from 50 per cent to 15 per cent because the capacity of the air for holding moisture has been so enormously increased by raising the temperature.

In the summer, conditions are frequently just the reverse. At the temperatures prevailing in the summer, even with normal humidity, there is a considerable quantity of moisture available in the air. When this air is brought inside and cooled to any extent, especially if it enters a cool cellar, the temperature is rapidly reduced; the quantity of moisture remaining constant, the humidity must increase. Providing the temperature drop is great enough, especially near walls or any cold object, the air will contain more water than it can hold at that temperature, and the vapor will be deposited in the form of a fog or damp which will settle on the paper, disturbing the equalized moisture conditions and resulting in curls and buckles.

An example based on figures perhaps will make this idea clearer. A comfortable, normally hot day in the summer would have a temperature of 90 deg. and a humidity of 60 per cent. It is only necessary to drop the temperature of air at this condition to 74 deg. to cause over 100 per cent humidity and consequent condensation of water vapor.

Dard Hunter's New Paper Mill

Students of papermaking and all who are interested in the preservation of the old handmade process will be interested to know that Dard Hunter has established a mill at Lime Rock, Litchfield County, Conn., where all kinds of fine papers will be made by hand. It is the only handmade paper mill in America for the production of artistic papers such as we have been dependent on heretofore to European mills.

Mr. Hunter intends to maintain his studio in Chillicothe, Ohio, where he will print and bind limited editions on the papers made by hand in his mill at Lime Rock, Conn. He has announced that in future all publications of his press at Chillicothe will be devoted to papermaking and no more than one edition every three years will be issued.

Waste Utilization and Stream Improvement

Review of Work Done by the National Committee in Organizing Committees and in Compiling Data

IN THE original outline of the activities of the National Committee on Waste Utilization and Stream Improvement it was assumed that the first year's work would have to be devoted almost exclusively to organization and the gathering of data and information. It seemed improbable that definite, concrete results could be shown in such a brief period. It is gratifying to report, therefore, that even in this short time some definite results can be pointed to as accomplishments of value to the industry.

Summary of Engineer Baker's Activities

The following is a summary of the activities of Engineer C. M. Baker:

1—Representation of the industry before state or federal officials, and organizations interested in stream improvement, to develop definite, co-operative programs or policies and thus check the tendency toward radical legislation or policies in the question of stream pollution.

2—The fostering and co-ordination of research within the industry in the question of waste utilization and stream improvement.

3—The collection, assemblage, and the dissemination of data upon the subject.

In carrying out this program it was necessary to organize committees representative of the paper industry in the various states where the industry is confronted with the problem of stream pollution; these committees to co-operate with state and local officials, and form a connecting link between state activities and the national program of the American Paper and Pulp Association. Committees were also named to include the various classifications of the industry, such as strawboard, paperboard, and sulphite.

Results of a Questionnaire

In December, 1927, a questionnaire was sent to all the paper and pulp manufacturers in the United States requesting information concerning improvements in white water utilization and the results obtained therefrom, also contemplated improvement or research along these lines. Replies were received from about 50 per cent of the production capacity of the industry. While notes and statistics were obtained in this way regarding the present position of waste utilization in the industry, they were so indefinite in details as to provide little specific information of general application to the problem. The results were tabulated, however, and indicated that while the paper and pulp industry is now realizing a net return of more than $5,000,000 annually in the utilization of fiber formerly wasted, there is still a potential loss of upwards of $6,000,000 annually.

Developments in Various States

State committees have been organized in Minnesota, Wisconsin, Michigan, Indiana, Ohio, Pennsylvania, Virginia, New York, Maryland and Connecticut. This activity, together with conferences with state officials and organizations active in the question of stream improvement, has constituted the principal work during the past year. It should be pointed out, however, that in each of these states aggressive movements to improve stream conditions had previously been initiated either by state officials or local organizations.

In this work it has been assumed that the development of constructive, co-operative programs between industry, state, and other organizations would head off radical legislation and policies, also that it was better to get in touch with the situation early, and thus help develop or formulate the original

program, than to wait until legislation or policies had been developed and then try to change them if unsatisfactory.

Investigation and Research in Virginia

Illustrative of this work is the recent development in Virginia. During the past twenty-two years, legislation to prohibit stream pollution has been sponsored in every Virginia legislature by wild life and sportsmen's organizations. Such legislation, however, has always been opposed by industry and failed to pass. This has created antagonism between the various interests. At the suggestion of Mr. Baker, State authorities called a conference of representatives of industry the Izaak Walton League, State officials, and municipalities. At this conference, the problem of stream pollution and its relation to industry was discussed. A committee was appointed, consisting of representatives from the Izaak Walton League, the Virginia League of Municipalities, officials from three State departments interested in the problem, and four representatives of industry appointed by the Virginia Chamber of Commerce. J. P. Hummel, of Hummel-Ross Fibre Corporation, is the representative of the paper mill group, while others represent various branches of industry. This committee has raised a fund of $7,500 to initiate the work prior to the meeting of the next legislature in 1930. Of this fund $5,000 was contributed by the various industries, $2,500 being appropriated from the State Conservation Fund. At a recent meeting of the committee Mr. Baker assisted in organizing a definite program of investigation and research.

Character of Legislation

Although many states have legislation regarding stream pollution, such legislation is generally prohibitory rather than regulatory in its nature. The development of co-operative programs in these states has therefore been important, and has been also definitely brought about in the States of Minnesota, Indiana and Connecticut. Developments are now in progress in West Virginia and New York State. Although co-operative programs had previously been initiated in the States of Ohio, Wisconsin, Michigan, Pennsylvania, and Maryland, much has been done to continue and perfect the activities in these States.

Developments in Research Work

Co-operative research committees have been organized in the strawboard, paperboard, and sulphite branches of the industry. While the results of research to date have not warranted sufficiently definite conclusions to justify publication, there have been some very interesting developments.

The work of the strawboard interests was commenced before the activities of the association were started. A very valuable piece of research has been carried on by this group at the Hagar Strawboard mill, Cedarville, Ohio, and the Hinde & Dauch Paper Company at Delphos, Ohio. The early work of this group indicated that by adding a coagulant and slightly modifying the cooking and beating processes, strawboard mills could operate on substantially a closed system, thus materially reducing the amount of raw material necessary to produce a ton of paper, and at the same time solving the stream pollution problem. Later developments, however, indicate that it is impossible through this process to manufacture a satisfactory grade of paper, but the research is still in progress and it is believed that some definite results will yet be obtained. Recent work at Cedarville consists of sedimentation and return of the effluent water to the system, and separate disposal of the sludge without utilizing it in the product. This process will materially reduce the amount of waste to dispose of.

A. B. Thomas, North Star Strawboard Mills, Quincy, Illinois, is chairman of the paperboard committee which was appointed by the Paperboard Industries Association at the suggestion of the engineer of the A. P. P. A. One paperboard mill has reduced its water consumption from approximately 28,000 gallons to 3,000 gallons per ton of product by mere recirculation of the white water on the showers. Another mill is operating on substantially, if not completely, a closed system.

The Sulphite Liquor Problem

George K. Spence, Castanea Paper Company, Johnsonburg, Pa., is chairman of the sulphite mill committee. Research by the E. B. Badger & Sons Company, in co-operation with the Oxford Paper Company at Rumford, Maine, indicates the possibility of profitably evaporating and burning sulphite waste liquor under certain conditions. At the Marathon Paper Mills, Rothschild, Wisconsin, the Howard process of differential precipitation of sulphite waste liquor is being developed. This method consists first of precipitation of the sulphur compounds for reutilization in the industry, then further precipitation of the resins and lignins for burning. Laboratory experiments were first carried out and a pilot plant is now in operation.

As previously pointed out, the major activity during the past year has been the development of co-operative programs between the industry and state officials. During the next year, definite, positive information of material value to the industry on the important problems confronting them will be available. In the meantime, mills having specific problems may secure such pertinent data as are available by communicating directly with the association's engineer, C. M. Baker, 2 South Carroll street, Madison, Wisconsin.

The 1928 Paper Census

The simplicity of the 1928 report forms sent to all pulp and paper mills at the end of December is evident by the fact that the information it has called for referred merely to the tonnage of the chief grades of paper and the facts on paper equipment.

The Bureau of the Census, at the suggestion of the American Paper and Pulp Association, included on this report form the main headings of the biennial census so that the data for both the 1927 biennial census and the 1928 short census would be comparable. The average manufacturer should be able to fill this form out with little or no effort, and the Bureau of the Census urges that every manufacturer make his returns promptly so that the totals may be published at the earliest possible moment and thus be of greater value of the industry.

Annual Meeting of T. A. P. P. I.

February 19, 20 and 21, 1929, have been set as the dates of the annual meeting of the Technical Association. There will be a three day session at the Waldorf-Astoria in New York City. (Hotel reservations should be made early.)

A program for the presentation of valuable and interesting papers is being prepared. Sectional meetings will be held under the leadership of the following committees: Cellulose, Paperboard, Heat, Light and Power, Fine and Special Papers, Corrosion and Waste, Physical Standards for Pulp, Training for the Industry, Sulphite Pulp, Materials Testing, Mechanical Pulp, Paper Testing, Soda and Sulphate Pulps. Papers will be presented at the general sessions by the Materials Handling and Stuff Preparation Committees.

223 inch Camachine 20 Installed at Madawaska

Placed at the end of one of Pusey and Jones' machines making light weight catalogue, book and waxing sheets at the new mill of Fraser Paper Limited at Madawaska, Maine, is one of the new Camachine 20's for handling light weight papers.

This machine, with a drum face width of 223 inches, can attain a speed of 3000 feet a minute, winding rolls up to 36 inches diameter.

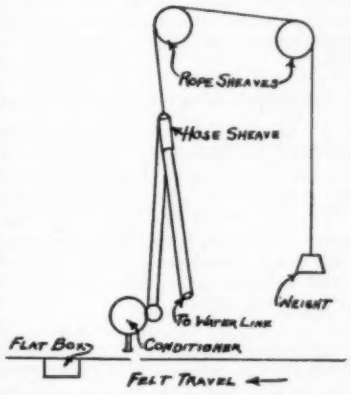
This is the fifth of a series of Cameron slitters and winders which Fraser Paper Limited has put into use at their Madawaska Mills. The first two are Type 18's operating on sulphite bond machines of 157 inch width, the third is a Type 19 winding a 177 inch web of bond, the fourth, also a 19, operating on a machine producing bond of 186 inch width.

Although details are not yet available, it is understood the Container Corporation of America, Chicago, is planning an extension program which will involve an expenditure of approximately $1,000,000.

Practical Helps for the Mill Man

Hose Guide for Felt Conditioner

THE hose of a felt conditioner installed on one of the felts of a cylinder machine installation during periods of operation was either kinking or twisting itself upon the floor of the machine room along the working side of the machine. To prevent the hose from coiling itself untidily upon the floor and to prevent it from kinking prompted one mill to support the hose in the course of its travel with several sheaves, ropes, and weight. The sheaves were located, and the weight determined, to keep the hose from the floor at all times and to prevent the hose from kinking without an undue pull being exerted upon the hose.



Speed Calculator for Paper Machine

FREQUENTLY a machine operator or production official is interested in knowing the number of feet per minute at which a paper machine is operating. In one mill this calculation has been made easy by supplying for each machine a brass plate rule in which the r. p. m. of the dryers over a given range with corresponding travel in feet per minute are inscribed. A stop watch is used in connection with the ruler. When the speed of the machine is to be determined, it is simply necessary to determine the r. p. m. of the dryers. This operation is simplified by using the stop watch. With the r. p. m. of a dryer known, it is only necessary to read the rule on which appears in two columns, one opposite each other, the r. p. m. and f. p. m. of the dryers. The brass plate upon which the figures were inscribed were approximately 2½" wide by 12" long. One plate, made for 48" diameter dryers, included data for speed in feet per minute for a machine operating over a speed range of from 1 to 30 r. p. m. Such a simple device eliminates the necessity of any calculation in so far as determination of speed in feet per minute is concerned.

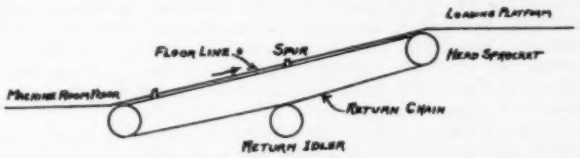
R.P.M.	F.P.M.	R.P.M.	F.P.M.	R.P.M.	F.P.M.	R.P.M.	F.P.M.
1	12.6	9	113.1	17	213.6	25	314.0
2	25.1	10	125.7	18	226.2	26	326.7
3	37.7	11	138.2	19	238.8	27	339.3
4	50.3	12	150.8	20	251.3	28	351.9
5	62.8	13	163.4	21	264.0	29	364.4
6	75.4	14	176.0	22	276.5	30	377.0
7	88.0	15	188.5	23	289.0		
8	100.5	16	201.1	24	301.6		

Induced Vacuum for Cylinder Molds

IN A mill producing paper from slow, long-fibered stock, it was found advantageous to create a very small suction or partial vacuum within the upper portion of the cylinder molds of a multicylinder machine in the area above the water level of the molds. Wood planking, 1½" to 2" thick, was shaped to close up one end of each of the molds and each of these forms was equipped with a relief gate. Similar planking was used to close up the opposite end of each of the molds, but in place of the relief gate opening, a round opening was left to which was connected a small exhauster through an approximately 5" diameter galvanized sheet iron pipe branching off from the main header. The area of each mold to be closed necessitated only a slight submergence of the sealing devices below the water level of the vat. The sealing devices were attached to the cylinder vat ends through the use of thumbscrews. A throttle valve was located in the main exhauster pipe. The facing wire on the molds was 60 mesh. Although the area of the molds on the return side to the vats was left open, the shower water applied on this point on each of the molds probably permitted the desired amount of vacuum to be created readily since the water sprayed continuously over this entire area. Such sealing devices have helped to prevent puddling and sliding of stock on the molds and permits a stock with lower moisture content to pass under the couch.

Truck Booster

THE truck runway leading from the machine room to the loading platform of one paper mill was inclined at such an angle that it was difficult for truck operators to haul the trucks up this incline without additional help. To eliminate the necessity of this additional help, a chain conveyor of semi-cast steel links joined by steel bar side links and equipped with high spurs was set in the floor of the runway. The chain was carried in the trough of a channel section and the top of the chain with the exception of the spurs on it was level with the runway floor. The spurs were sufficiently high to connect with a truck centered over the



conveyor by the truck operator, and without any effort on his part other than to guide the truck and to convey it to the top of the incline. The conveyor traveled slowly to reduce to a minimum any accident hazard, probably operating around 40' per minute. Such a conveyor installation has simplified the paper handling problem and has made the work of the truck operators less tiresome.

First Book Printed on Cornstalk Paper

Dr. George M. Rommel's book, "Farm Products in Industry", is the result of an extended survey by the author under the direction of the Department of Agriculture into the industrial utilization of farm products. It was, therefore, appropriate that this should be the first book to be printed on paper made from cornstalk pulp.

The Cornstalk Products Company, has successfully developed a process for making a fine grade of pulp from cornstalks at its plant at Danville, Ill. This company furnished the pulp from which the paper for Dr. Rommel's book was made. The text paper was manufactured by the Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich., and the coated paper by the Michigan Paper Company, Plainwell, Mich.

The Midwest Power Conference and Exhibition will be held at Chicago, February 12 to 16, 1929. The conference will have headquarters at the Palmer House, while the exhibition will be housed in the coliseum. During this Power Show Week, the Power Transmission Association will hold a regional meeting in Chicago.

SOUTHERN NEWS

Harriman Company to Build Mill in Tennessee

The Harriman Company, a subsidiary of the Mead Pulp and Paper Company, Chillicothe, Ohio, plans to erect a million dollar mill for the manufacture of corrugated board at Harriman, Tenn. Investigation is being made as to the feasibility of using water from the Clinch River several miles away, but wells will also be sunk.

In conection with this project, it is reported that the Harriman Company will take over the plant of the Union Tanning Company at Harriman, and will utilize the by-product of this plant in the board mill.

A large paper manufacturing company has sought the assistance of the Kentucky State Forest Service in the selection of a site for a pulp mill in Kentucky. Data is being assembled as to location, and the amount and kind of wood available for the manufacture of wood pulp. The area of potential forest land in that State is estimated by the Forest Service to be 10,500,000 acres. In this is included 1,618,746 acres of unimproved farm land, 6,018,280 acres of woodland and more than 2,800,000 acres of other forest land. W. E. Jackson, Jr., state forester, has called attention to the many natural advantages that favor Kentucky as a location for wood using industries.

Children and Trees

The thought of preserving for posterity the natural resources which the present generation enjoys is fittingly used as the subject of a unique Christmas greeting sent out by the Great Southern Lumber Co., Bogalusa, La., on which there is a picture of two little children standing in a plot of young growing trees. Children and trees bring realization of the real purpose of an extensive reforestation program, that the next generation may enjoy an unlimited source of timber supply. Trees that are planted now will grow as the children grow, and when the children of today are ready to take their places in the world, the seedlings of today will be a forest of mature timber.

This company is earnestly engaged in the work of growing trees, and its reforested areas, some of which were planted in 1921, already hold great promise of forests to come.

A committee of the Hawaiian Sugar Planters Association believes the Hawaiian Islands may have a new industry—the manufacture of paper pulp on a large scale from the bagasse refuse of its sugar plantations. A board has been appointed to make investigation.

Shepard Crane and Niles Crane Merge

The Shepard Electric Crane & Hoist Company including its Sprague Division, and the Niles Crane Corporation have combined under the corporate title Shepard-Niles Crane & Hoist Corporation, the merger of interests providing a single source of supply for all sizes of travelling cranes and electric hoists. The Shepard plant at Montour Falls, N. Y., and the Niles plant at Philadelphia will be continued in operation for the production of the types of equipment for which their facilities have been designed. The main office will be at Montour Falls, N. Y. The three divisions of the new corporation will operate as the Shepard division, the Niles division and the Sprague division, representing the former companies, to wit—Shepard Electric Crane & Hoist Company, Niles-Bement-Pond Company and Niles Crane Corporation.

The officers of the Shepard-Niles Crane & Hoist Corporation are: Col. Edward A. Deeds, Chairman of the Board; S. G. H. Turner, Chairman of the Executive Committee; Frank A. Hatch, President; Sydney Buckley, 1st Vice-President; James A. Shepard, Vice-President; Robert T. Turner, Vice-President. To the Board of Directors also will be added from the Niles-Bement-Pond Company, Colonel Leonard S. Horner, President and Charles K. Seymour, Vice-President of that Company.

Pioneer Manufacturer Celebrates Centenary

The year 1928 marks the one hundredth anniversary of the pioneer manufacturer of the fourdrinier machine—the Smith & Winchester Manufacturing Co., South Windham, Conn.

In 1829 the first fourdrinier machine to be made in the United States was set up by this company in the mill of Amos H. Hubbard, which later became the A. H. Hubbard Company, Norwich, Conn. A second machine was manufactured for Henry Hudson of East Hartford, Conn., and a third for W. & C. Baldwin, Bloomfield, N. J. No fourdrinier machines other than these were made in this country prior to the year 1833. Thus the century of service just closed, forms one of the outstanding chapters in the history of papermaking in this country.

Sullivan Machinery Co. Elects New President

At a special meeting of the Board of Directors of the Sullivan Machinery Company, December 31, 1928 at Boston, Arthur E. Blackwood of Chicago was elected president of the company to succeed the late Frederick K. Copeland.

Mr. Blackwood has been with the company for thirty-two years. For the past nine years he has been a director and first vice president in charge of finances, and worked in close relation with Mr. Copeland in the company's head office at Chicago.

Groveton Paper Company, Inc., Groveton, N. H., has just made an announcement to the trade that hereafter its product will be distributed by its own sales force. Sales offices will be established in New York and Boston, and it is felt this plan will bring the mill in direct contact with customers and will be mutually beneficial. Until announcement is made of the location of offices in the cities mentioned, all orders will be received at the mill at Groveton.

The Du Pont Cellophane Company announces the appointment of Frederick R. Downes as a part of its outside organization to handle the development of cellophane as a utility material. Mr. Downes will work in the closest contact with the chemical and research men of the company, will make surveys into various trades and be ready to assist customers in the research necessary to indicate the possibility of the use of cellophane as a utility material in their fields.

General Electric Names New Managers

The General Electric Company, Schenectady, N. Y., announces the appointment of two new managers. H. L. R. Emmett will be manager of the Erie, Pa. Works, succeeding Matthew Griswold, and J. E. Brobst is named as the new manager of the Bloomfield, N. J. plant, replacing C. D. Knight. Messrs. Griswold and Knight have both retired from active service on account of ill health.

Mr. Emmet has been with the company since 1912, serving as production manager of the Schenectady works since 1922. Mr. Brobst came with the company in 1903 and since 1920 has been engineer of the industrial control engineering department at Schenectady. He will continue to act in that capacity, having general supervision over the engineering departments at both Schenactady and Bloomfield.

R. M. Gates Elected to Vice Presidency

Robert M. Gates, manager of the industrial department of The Superheater Company, has been elected vice-president of that company. Mr. Gates affiliated himself with The Superheater Company in 1922 and has since been actively engaged in directing the engineering and sales of Elesco superheaters for stationary power plants and special pipe coils for the oil and other industries.

Mr. Gates has taken a prominent part in the activities of the American Society of Mechanical Engineers. For the past two years he has been chairman of the committee of meetings and program, and at the last general election he was made a member of the Council of that Society.

New Catalogues, Books and Publications

Bradley Washfountain Co., Milwaukee, Wis.—"Modern Washroom Requirements", is a new catalogue illustrating and describing the complete line of new and improved Bradley washfountains for sanitary group washing in industrial plants. There are photographs of various installations and diagrams of suggested layouts for modern washrooms.

Coe Manufacturing Co., Painesville, Ohio—"Coe Board Dryers", is the title of an attractive catalogue in which this company outlines the construction and principle of operation of its roller dryers. These dryers are used for drying artificial boards made from gypsum, wood fiber, paper, rags, cornstalks, sawdust, straw, etc. A large number of interesting photographs show various applications.

Du Pont Cellophane Co., Inc., 2 Park Ave., New York City—An attractive catalogue, "Cellophane—The Modern Merchandising Aid", features this company's transparent wrapping material. The process of manufacture is explained and the different uses are pictured in a number of illustrations reproduced in natural colors, making a direct appeal to the reader.

Electric Machinery Mfg. Co., Minneapolis, Minn.—A well illustrated book entitled "Reducing the Cost of Electric Power" takes up the subject of power factor correction with capacitors (static condensers). This company specializes in the manufacture of apparatus for power factor improvement, and the book is arranged to give a non-technical explanation of power factor and shows when and how to apply capacitors to reduce electric power cost. Copies on request.

Lawrence Pump & Engine Co., Lawrence, Mass.—An insert bulletin, No. D-21, illustrates different types of Lawrence "Vortex" Centrifugal Pumps; also the automatic vertical shaft submerged pump for handling hot caustic soda or other chemical liquids.

Samuel C. Rogers & Co., Buffalo, N. Y.—A new circular illustrates the features and construction of the new Rogers 12" and 14" segment wheel chuck adaptable for use on vertical and universal grinders in addition to various makes of machine knife grinders.

Wagner Electric Corp., St. Louis, Mo.—A new 52 page catalogue No. 160 describes Wagner distribution transformers in single-phase and three-phase, pole-type and subway-type in ratings up to and including 500 Kv-a. One-half of the catalogue is devoted to a detailed description of the design and construction of Wagner distribution transformers and the remainder to ratings, shipping weights, prices, etc. Copy upon request.

BOOK REVIEWS

Fenestra Way of Daylighting and Airation—This is the subject of a treatise explaining how the lighting and ventilating requirements of almost any proposed building may be analyzed, and is the result of a series of surveys and experiments conducted by the Department of Engineering Research of the Detroit Steel Products Co., Detroit, Mich. and the University of Michigan. The function of this system is to predetermine natural and sufficient lighting and ventilation for industrial buildings. It has been ascertained that too many buildings are erected without a definite knowledge of how and where and what kind of windows should be used, with the result that some buildings are insufficiently or unevenly lighted, some inadequately ventilated and thousands of dollars wasted. Some of the topics discussed in this treatise are: Adequate and Uniform Illumination, Controlling Daylight in Industrial Buildings, Window Area and Window Height, Sidewall and Monitor Windows, Vertical vs. Sloping Windows, How Often Should Your Windows be Washed, Co-ordinating Wind and Temperature Difference, Monitor Windows Compared with Roof Ventilators.

Serlachius Festschrift—In celebration of the sixtieth anniversary of the founding of the firm, the G. A. Serlachius Aktiebolaget, Mantta, Finland, has published a voluminous pictorial account of the firm's development. The extent of the plant conducted by the Serlachius firm is shown by statistics of production and in splendid illustrations of the various departments of what is perhaps the greatest pulp and paper producing concern in Finland. There are also well executed process portraits of G. A. Serlachius and Col. Gosta Serlachius. The G. A. Serlachius Aktiebolaget, which is capitalized at 200,000,000 Finnish marks, has an annual production of 15,000 tons of groundwood, 23,000 tons of sulphite pulp, 23,000 tons of paper and 500,000 liters of sulphite alcohol.

Soluble Silicates in Industry—The most recent of the American Chemical Society monograph series is a book of nearly 500 pages entitled "Soluble Silicates in Industry", the author of which is James G. Vail, chemical director of the Philadelphia Quartz Company, who is beyond question the foremost authority in America on the whole subject of silicates of soda and their various uses. Sixteen pages of the book, 278-294 inclusive, are concerned with a discussion of our present available knowledge of paper sizing, whether combined with rosin or starch, and applied either to paper or paperboard, greaseproof paper, or glassine. Other sections of the book deal with corrugated paperboard, solid fiberboard and coating paper. Paper mill men will be interested also in the assembly of information on digester lining and on water treatment. The references to the literature have been selected with evident care and they form an invaluable index to sources of articles that have appeared in the world's literature of papermaking as well as to British, French, German and United States patents. The author of the book is to be particularly felicitated on the index references, which are most abundant, there being a complete index of subjects as well as an author index. Illustrations are used freely throughout the book and these together with the easy-flowing style of the author make it a delight to consult. From a perusal of the chapters dealing with Adhesives, Deflocculation and Detergency, and Additional Uses the student of papermaking will get many a valuable hint regarding the possible uses of silicate in mill operations. Formulas are numerous throughout the work and there are many references and observations which can be put to practical use. It is a work which can be heartily recommended for a place on the shelf of books indispensable for papermakers. It is published by the Chemical Catalog Company, 419 Fourth avenue, New York, at $9.50.

Papermaking Materials—A second edition of the bibliography or reading list of papermaking materials, originally compiled by C. J. West and published by Arthur D. Little, Inc., Cambridge, Mass. in 1890, has been issued by the Technical Association of the Pulp and Paper Industry under the imprint of the Lockwood Trade Journal Company, Inc., New York, at $3. The new edition is larger by seventy pages than the first edition and it is provided with stiff covers. As an instance of the extent of the references it may be noted that under "Zea mays" there are sixty-five references to the use of cornstalks as raw material for paper, exclusive of republications. Greater uniformity in the printing of author's names and more attention to proofreading would be desirable in a third edition. Under "bagasse" Drewsen, who was one of the earliest investigators of this material and of cornstalks as sources of paper fiber, is named properly "Drewsen, Viggo" while under "Zea mays" the name is given both as Drewsen, Vigo, and Drewsen, V.

Envelope Manufacture—Under the title **Briefumschlagfabrikation**, by Th. Gerdon, the Papier-Zeitung of Berlin has issued a comprehensive small work covering the various aspects of machine and handmade envelope manufacture and envelope adhesives. There is a chapter on paper and the tinting of envelope interiors of interest to consumers of this class of paper, for whom the book is especially intended. The book is obtainable bound in linen at 8 Reichmarks from Verlag der Papier-Zeitung Carl Hofmann GmbH., Berlin SW 11, Germany.

Gardenvale Directory of the Canadian Pulp and Paper Mills and Allied Trades—The Garden City Press of Gardenvale, Quebec, has published the first edition of this directory which has been most carefully compiled, furnishing practically any information desired pertaining to pulp and paper mills and the industry in general throughout Canada. The first part of the book contains various interesting chapters on the forest resources, available water power, a historical outline of the early development of the industry and a brief explanation of the principles of paper manufacture. A statistical review of the pulp and paper industry in Canada is given, with tables and charts that offer valuable data to those seeking such information. The mill section contains a complete list of the paper, pulp and chemical fiber mills, together with classified lists of mills by products and goods made, an index to mill officers, "Who's Who in Paper", and a carefully prepared list of the paper merchants of Canada. There is an up-to-date list of printers and publishers arranged in alphabetical order and classified by cities and towns. There is also a list of manufacturing stationers, lithographers, engravers and converters of paper. The index to mill supplies, equipment and services, gives reference to the principal paper and pulp making machinery builders and supply houses. A map insert of Canada gives the location by symbol of pulp mills, paper mills and pulp and paper mills.

Suit to Enjoin Fidalgo Company

Suit has been filed in the United States court for the Western District of Washington by Richard D. Kehoe, president of the Technical Economist Corporation, 40 Rector Street, New York, against the Fidalgo Manufacturing Company, Fidalgo Sales Corporation and certain individuals named as directors and stockholders of the Fidalgo Manufacturing Company, to enjoin the defendants from asserting title to the Fidalgo patents or using them for their own purposes.

The chief end sought in the suit is to enforce delivery of the patents and all foreign rights to Mr. Kehoe and his associates in Technical Economist Corporation.

Thomas R. Remsen of Hudson Falls, N. Y. has been appointed resident manager of the Hudson Falls mills of the Union Bag and Paper Corp., succeeding Geo. S. Witham, Sr., who has been transferred to the position of manager of the production engineering department. Mr. Witham will continue to make his headquarters in Hudson Falls. Mr. Remsen was formerly manager of the engineering repairing, maintenance and power department of the local branch of the company.

General Refractories Company, Philadelphia, has opened a new district sales office at Boston, located in Room 509, Marshall Building, 40 Central Street. This office will be in charge of Nelson W. Bowman, formerly of the company's New York office.

The Month at Washington

WITH the Christmas recess over, Congress is on the last lap of the final sessions of the 70th Congress, and is frantically scrambling to dispose of as much of the pending pile of legislation as is humanly possible before March 4th next.

According to Senate Joint Resolution 183, recently introduced by Senator Schall, the Congressional Record would in the future be printed on paper made from waste products of field crops on American farms. The bill is designed to encourage the manufacture of white paper from the waste products of the farms such as cornstalks, rice, wheat and flax straw and sugarcane pulp. It is estimated that $275,000,000 worth of spruce paper is annually imported from foreign countries (1927 imports: Pulpwood, pulp, rags and other paper stock $113,632,000; paper except printed matter $149,365,000; books and other printed matter $13,159,000; total, $276,156,000.—Ed.), whereas the same value in American products from the farms lies rotting on the soil because of the lack of the necessary manufacturing facilities to transform it into paper. It is also hoped that paper manufacture from these by-products will relieve the distress of the farmers.

Legislative action is being sought to protect spawning salmon. Resolutions recently adopted by the Association of Pacific Fisheries would request both the Canadian and American Government to withdraw certain permits for hydroelectric developments and pulp and paper mills on salmon streams. Although the Canadian government is planning to widen the channel of the Fraser River in British Columbia, to aid the upward movement of spawning salmon, it is believed that only a new treaty with the United States, restricting fishing operations can restore the old Fraser run of sockeye salmon.

The House has under consideration several amendments to the Constitution on the labor question, House Joint Resolution No. 347, introduced by Congressman Dallinger, would amend the Constitution by adding another article: "The Congress shall have power to establish uniform hours and conditions of labor throughout the United States"; while H. J. Res. 335, offering another amendment would go a little farther, and provide that Congress shall have power to establish uniform hours and conditions of labor for women and minors throughout the United States, and to prohibit the employment of children under such ages as Congress may from time to time determine.

A bill introduced by Congressman Brand of Ohio (H.R. 14805) would amend the Tariff Act of 1922 by transferring rag pulp from the free list to the dutiable list, amending par. 1651 to read: "Paper stock, crude, of every description, including all grasses, fibers, rags, waste, including jute, hemp and flax waste, shavings, clippings, old paper, rope ends, waste rope and waste bagging and all other waste not specially provided for, including old gunny cloth and old gunny bags, used chiefly for papermaking, and no longer suitable for bags," while section 2, par. 1313, is amended to read as follows: "Rag paper; papers and paper board and pulpboard, including cardboard and leatherboard or compress leather, * * * or cut or shaped for boxes or other articles, plain or printed, but not lithographed, and not specially provided for; paper board and pulpboard, including cardboard and leatherboard * * * press boards and press paper, all the foregoing, 30 per cent ad valorem; test or container boards of a bursting strength above 60 pounds per square inch by the Mullen or the Webb test, 20 per cent ad valorem; stereotype-matrix mat or board, 35 per cent ad valorem; * * * manufactures of paper, or of which paper is the component material of chief value, not specially provided for, all the foregoing, 35 per cent ad valorem; effective upon the day following its enactment.

Senator Watson introduced a bill (S.5104) to create a Federal Communications Commission to provide for the regulation and control of telegraph, telephone, cable, and radio communications. This commission when established would take over all the functions in this connection now exercised by the Interstate Commerce Commission, the Postmaster General and the Federal Radio Commission.

Several bills affecting the postal service, already passed by the House may shortly pass the Senate and be enacted into law, (S.4610) for delayed-delivery service, to provide for the delivery of certain mail matter upon a date specified by the sender; and (H.R.56) to authorize the Postmaster General to issue receipts to senders for ordinary mail of any character, and to fix the fees chargeable therefor; H.R.12898, to extend the collect on delivery service and limits of indemnity to sealed domestic mail on which the first class postage rate is paid.

No definite action has as yet been taken on the legislation now pending in both houses to create a division of safety in the Bureau of Labor Statistics (S.1266, H.R.6848).

Hearings have been held on the use of injunction in labor disputes, known as the Shipstead anti-injunction bill (S. 1482), and strenuous efforts are being made to push this to a final decision, either passing it with amendments or defeating its passage. This bill strips the Government of the power of dealing with labor combinations and at the same time leaves private interests without the power of self-protection. The bill is in the hands of the Senate Judiciary Committee.

Congress has at last shouldered the responsibility of inaugurating calendar reform and a number of bills have been introduced seeking the adoption of some measure to revise the calendar (H.J.Res.334). This resolution requests the President to call an international conference on the simplification of the calendar. It will be recalled that the League of Nations has a committee on calendar reform which has adopted two plans for the reform of the calendar known as Plan B and Plan C, respectively, one of which would make all week and months equal, running 13 months to the year, and the other would leave 12 months in the year but would run 8 months of 30 days each and 4 months of 31 days each.

Recent Tax Decisions—Contributions to the civic fund of a city were held in a recent decision of the U. S. Board of Tax Appeals (Docket 13044) under the particular facts of the case, not to have been ordinary and necessary business expenses of the year in which paid or incurred.

Where a corporation pays to a state capital stock taxes on outstanding shares in the hands of its shareholders, and did not withhold the amounts from the shareholders in subsequent dividend payments, the Board held that the transaction was in effect a distribution of surplus and the amount not being withheld from stock dividends could not be claimed as a deduction for income tax purposes (Nos. 14702, 30751, 33212).

In Filer Fibre Co. vs. Commissioner of Internal Revenue (Docket No. 24877), deductions were allowed on pulp mill and equipment on the basis of a redetermined rate of depreciation.

Experimental expenses should be charged to capital or expense, depending upon the nature of the expenditure, according to another decision by the Board; also holding that the cost of organizing a corporation may not be recovered by exhaustion deductions; also that a patent application is not a depreciable asset, but when a patent is issued de-

preciation may be taken over the life of the patent (Nos. 28862 and 32108).

Contributions made to an association for the purpose of preventing strikes and promoting industrial peace are allowable deductions, according to another decision of the Board (Docket Nos. 13973, 24509, and 27247); so also contributions made to an association for the purpose of encouraging location of industries and residents by advertising are business expenses and deductible; but contributions made to a citizens' committee to exercise surveillance over public works is too remote and not a business expense.

Expenses for experimental work which do not result in the acquisition, development or improvement of a capital asset, are deductible in computing net income, according to another decision by the Board (No. 19507).

Beginning with the Revenue Act of 1921, provisions were enacted whereby a taxpayer could enter into a final closing agreement with the Bureau of Internal Revenue with respect to the tax liability for any given year. Such provisions were contained in the Revenue Acts of 1924 and 1926 also, but required as conditions precedent that the correct tax liability be determined and that payment of deficiencies or refund of overpayments be made and accepted by the taxpayer before a closing agreement could become effective. Section 606 of the Revenue Act of 1928, however, contained provisions which have simplified the procedure, and the present law dispenses with the conditions precedent as contained in the prior acts, and an agreement may be now entered into after determination of the tax liability by the Bureau, the taxpayer consenting to the necessary adjustments with respect to deficiencies or refunds, says the Bureau in a recent announcement calling attention to this simplified practice.

Recent Customs Decisions—Sandstones, cylindrical in shape, with holes through their centers, to be mounted on shafts and used to grind wood into wood pulp, were held subject to duty at $1.75 per ton under par. 236 of the tariff act of 1922 in a recent decision by the U. S. Customs Court, published as Treasury Decision 43071.

Pending a decision by the U. S. Court of Customs Appeals, as to the proper classification of imports of a type of gold leaf paper, the U. S. Customs Bureau will assess duty on this merchandise at the rate of 82½ cents per 100 leaves under section 383 of the Tariff Act, instead of at the lower rate of 5c per pound and 15 per cent ad valorem under par. 1305, according to a recent announcement of the Treasury Department.

Interstate Commerce Rulings—By a recent order the Interstate Commerce Commission (I & S Docket No. 3208) suspended to July 10, 1929, the operation of certain schedules proposing to increase the rates on newsprint paper from Canadian mills to New York City and related points in New Jersey.

Rates on pulp wood, in carloads, from origins in Ontario and Manitoba, Canada, and in Minnesota, to Wisconsim Dam and Kings, Wis., were found not unreasonable in a recent decision by the Commission and the complaint of the Tomahawk Pulp and Paper Co. was dismissed (No. 18589).

Rating on printed waxed-paper wrappers; in less than carloads, from Memphis, Tenn., to destinations in the South were found unreasonable in another decision and a reasonable rating was prescribed for the future in Saniwax Paper Co. (No. 20210).

In Individual Drinking Cup Co. (No. 19810) the Commission finds that ratings and rates applied on shipments of paper cups, in less than carloads, in southern and western territories were not unreasonable.

Proposed increased rates on newsprint paper, in carloads, from Lake Charles, La., to Shreveport, Monroe and Ruston, La., were found not justified in another decision and the suspended schedules were ordered cancelled in I & S Docket No. 3095.

Standard Catalogue—A Federal Standard Stock Catalogue, drafted primarily for use in the Government service, but considered of interest to the commercial field, has been prepared by the Office of the Chief Co-ordinator, and the catalogue, complete or in sections, is now available for sale through the Superintendent of Documents, Government Printing Office. As the assignment of nomenclature to the items comprised in the catalogue is based on a truly scientific system, it is believed that its adoption as a standard will be welcomed by industry and will have a widespread and beneficial effect in the commercial field, since the importance of exactness and uniformity with respect to nomenclature cannot be overemphasized. With a single standard of nomenclature in general use, the transactions of individuals, firms, industries and the Government—both inside and outside their organizations—would be greatly facilitated, uncertainty would disappear and the routine of supply and procurement standardized, expedited and made more economical. Comparatively few articles peculiar to the sole uses of the Government are shown in the catalogue and the great majority of articles are those in common use by most lines of business—both large and small. Stock numbers and code words are used in the simplification process.

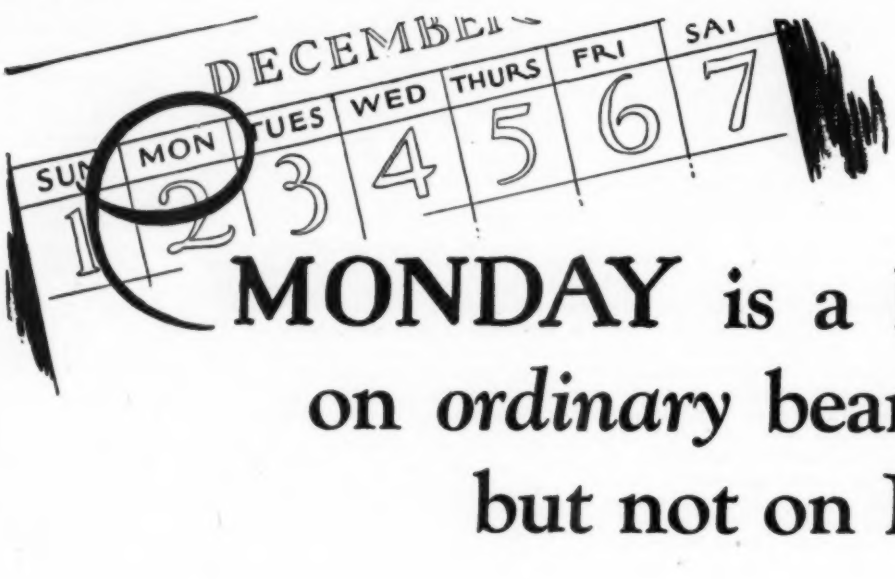
Postal Matters—The Government's responsibility for a letter is held to cease when placed in the box of the addressee, according to a recent decision of the U. S. Circuit Court of Appeals (6th Cir), No. 5098. The company maintained a box in which the postman delivered all mail, and a valuable letter was taken therefrom after the postman deposited it in the box. The court held that with the deposit of the letter in such a box by the postman, the duty and responsibility of the Government as a carrier of mail were finished and the letter had passed beyond the protecting power of the government.

A specially-designed stamped envelope to facilitate the handling of air mail is now on sale at the larger post offices. A new size window envelope, conforming to simplified practice as promulgated by the Department of Commerce, known as the No. 6, has also been issued in 2-cent denominations, and will be furnished unprinted or with private return cards. All 5-cent and 4-cent envelopes are now to be of extra quality paper. Amber envelopes will again be issued in addition to the present white and blue. The No. 5 manila envelope has been discontinued.

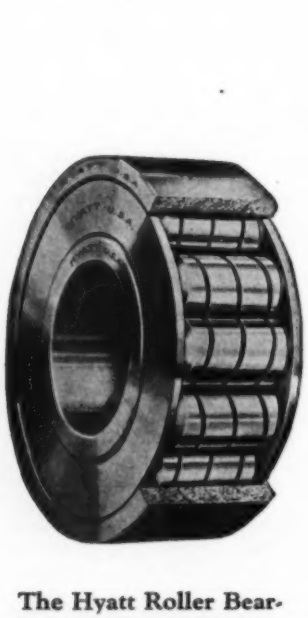
There are now 35 foreign countries and colonies to which letters may be sent from this country at the postage rate of 2c an ounce or fraction thereof, viz: Argentina, Bahamas, Barbados, Bermuda, Bolivia, Brazil, British Guiana, British Honduras, Canada, Chile, Colombia, Costa Rico, Cuba, Dominican Republic, Dutch West Indies, Ecuador, Great Britain and Northern Ireland, Guatemala, Haiti, Honduras, Jamaica, Leeward Islands, Mexico, Newfoundland (including Labrador), New Zealand, Nicaragua, Panama, Paraguay, Peru, Salvador (El), Spain, Trinidad, Uruguay, Windward Islands.

Definite dates for the beginning of operation of three foreign air mail routes, two of which constitute first steps toward establishment of air service to South America, were recently announced by the Postmaster General, viz: Miami, Florida, to Nassau, Bahama Islands, one way, beginning January 2d; Miami to San Juan, Porto Rico, via Habana, Cuba, and Santo Domingo, tri-weekly service, both ways, beginning January 9th; Miami to Cristobal, Canal Zone and back, bi-monthly, beginning January 11th.

Properties of steam—More complete data on the properties of steam are now available for engineers through the co-operative efforts of the Bureau of Standards and the American Society of Mechanical Engineers. A new steam table is to be issued which it is hoped will eventually be adopted as an international standard. The development of equipment for the production of power through the medium of steam has made such rapid strides in recent years that better knowledge of the physical properties of steam has become an important economic need. The trend in equipment has been toward larger and more efficient machines for generating electric power from coal. Existing tables of the properties of steam, such as engineers used in the design and operation of steam boilers and turbines, have for some time been inadequate to the needs of the advancing practice, and newer, more extensive and more accurate table of pressure, volume and heat content of steam are required.



MONDAY is a hard day on *ordinary* bearings - - but not on Hyatts



The Hyatt Roller Bearing—outer race cut away to show construction of roller assembly.

A TREMENDOUS tax is imposed on the performance and life of plain bearings when mill equipment is started Monday mornings.

The week-end shutdown permits the lubricant to ooze off, leaving the plain bearing surface dry and unprotected—easy prey for friction and wear. Bearing life is shortened. Frequent replacements and production tie-ups are inevitable.

Hyatt Roller Bearings, in contrast, are never dry. There is always a grease film on the bearing surface due to the hollow, slotted rollers. That is also the reason why they need be lubricated only three or four times a year—measurably cutting labor and lubricant costs.

To enjoy the advantages of Hyatt Roller Bearings specify them when ordering new equipment . . . or let us tell you about changeovers on your present machinery.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago Pittsburgh Oakland

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

The Bureau of Standards has worked on the problem for several years now and a part of its work has just been completed and published.

Wholesale Prices—Further reduction in the general level of wholesale prices is shown in recent data released by the Bureau of Labor Statistics, showing a decrease of 1 per cent in November as compared with October. With 1926 as the basis of 100 the following change is shown for paper and pulp:

Nov. 1927	Oct. 1928	Nov. 1928	Purchasing power of 1926 dollar in Nov., 1928 (cents)
91.3	89.0	88.8	112.6

Recent Publications—"Our World Trade" showing some striking major trends in American foreign trade are shown in this bulletin just issued by the U. S. Chamber of Commerce, showing Canada our best market, and indicating that the foreign trade of the United States is forging ahead steadily. Imports of wood pulp showed a slight falling off for the year.

"Pulpwood Consumption and Wood-Pulp Production" is the title of a report just issued by the Census Bureau covering data collected in 1928 on the biennial census of the consumption of pulpwood as reported by 219 mills and a copy of which may be had upon application.

"Domestic and Foreign Trade Outlook for 1929" is the title of a mimeographed bulletin released by the Bureau of Foreign and Domestic Commerce, available upon application by interested parties.

The Annual Report of the National Advisory Committee on Aeronautics, for 1928, is available as Senate Document No. 178, second session, 70th Congress, covering the 25th anniversary of the first flight of an airplane, and rounding out the first quarter of a century of aviation. Part V presents an outline of the present state of aeronautical development.

The annual report of the Federal Trade Commission gives an interesting outline of the work of that body during the last fiscal year, and among other things includes a discussion of the waxed-paper industry. Never in the history of American business has there been a time when self regulation has received more intensive consideration, according to the commission. Competitive conditions in many industries are being studied and intelligently analyzed, codes are being adopted, much money is being expended in educating industries for the work of self regulation, but when faults are discovered and rules adopted for their correction, it remains for the trade practice conference procedure to supply in a measure at least, an element which heretofore has been completely lacking, namely, enforcement.

Federal Trade Ruling—The Federal Trade Commission has jurisdiction where one firm adopts the trade name of another competitor, this being construed and interpreted as unfair competition.

Miscellaneous Notes of Interest—A study of the relationship between weather conditions and forest fire hazard is one of the major investigations now under way at the Forest Service Experiment Stations.

"Measuring Forest Fire Dangers" is the title of Misc. Pub. No. 29-M just issued by the Forest Service.

The renewal of efforts to establish large-scale manufacture of paper and wallboard from cornstalks may become an important factor in the control of the corn borer, provided the rather ambitious experiments now being undertaken by several firms proves more successful than the many previous ill-fated attempts to convert this important waste into profitable commercial product, says the U. S. Department of Agriculture.

Tax relief for timberlands, extension of public forest ownership, and fire protection were important subjects of state legislation during the last year, says the U. S. Forest Service in a review of the progress made in state forestry legislation during the year.

Surveys by commercial companies awarded contracts in Alaska for the development of the pulp and paper industry are being carried forward and early construction of hydro-electric units is anticipated, according to the Department of the Interior, publishing the annual report of the Governor of Alaska.

Employment and Pay-rolls—Employment decreased 0.5 per cent in November as compared with October, and pay-roll totals decreased 3 per cent, according to figures just issued by the Department of Labor. With 1923 as the basis of 100 the following changes are shown for paper:

	Employment			Pay-roll totals		
	1927	1928		1927	1928	
	Nov.	Oct.	Nov.	Nov.	Oct.	Nov.
Paper and printing	105.1	103.5	104.8	114.7	115.1	115.3
Paper and pulp	93.1	90.5	91.3	99.0	99.2	99.4
Paper boxes	103.8	100.5	102.5	117.5	118.1	121.8

Industrial Purchases—That much information of value to manufacturers and distributors of industrial goods may be expected from the trial census of industrial purchases now being conducted in Cleveland, Ohio, is indicated by the promptness and thoroughness of returns to date as seen by the Census Bureau.

Industrial Relations Problems Discussed

Industrial relations activities and practices were discussed at a recent meeting of the National Industrial Conference Board, of which the American Paper and Pulp Association is an organization member, and a number of paper manufacturers supporters. During the discussion emphasis was placed on "Financial Incentives to the Management Personnel, and Obsolescent Employees." E. K. Hall, vice-president of the American Telephone and Telegraph Company, outlined five fundamental objectives of industrial relations, as follows:

1—The elimination of misunderstandings.
2—The elimination of financial worries.
3—The creation of self-respect and self-reliance.
4—The establishment of the worker's relation to his job and to the organization.
5—The stimulation of the ambition and pride of the worker in his job and in his company.

It is interesting to note that, according to Mr. Hall, the following guideposts lead to the achievement of these objectives:

Contact
Conference
Confidence
Co-operation

These four guideposts are the very essence of successful modern trade association work. Paper manufacturers generally might obtain a great deal of valuable facts and assistance in their trade relations problems by contact with the National Industrial Conference Board.

To Discuss the Future of Cellulose

Dr. Charles Holmes Herty will be one of the two men who have been invited to address the annual business meeting of the American Paper and Pulp Association in February.

As announced he will speak on "The Future of Cellulose" that structural basis of the vegetable kingdom and the greatest construction material in the world.

It is probably not too much to say that the quality of civilization in different countries depends largely upon the form and extent in which cellulose is available to them. For example, here in the United States there is probably $7,500,000,000 tied up in the capitalization of the industries based on the utilization of cellulose, with some $3,400,000,000 invested in the lumber industry, at least $2,500,000,000 in the cotton textile industry, and probably more than $1,500,000,000 in the paper industry.

Dr. Herty has made a thorough study of the utilization of cellulose and will present some striking future possibilities, which will be of interest to all pulp and paper men, both technicians concerned in the refinement of processes whereby cellulose is formed into sheets of paper and the executives who are responsible for the adaptation of those processes to commercial undertakings, the value of whose annual product is at least equal to the capitalization of the industry.

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The *lubricated valves* for the Paper Industry

Won't Stick
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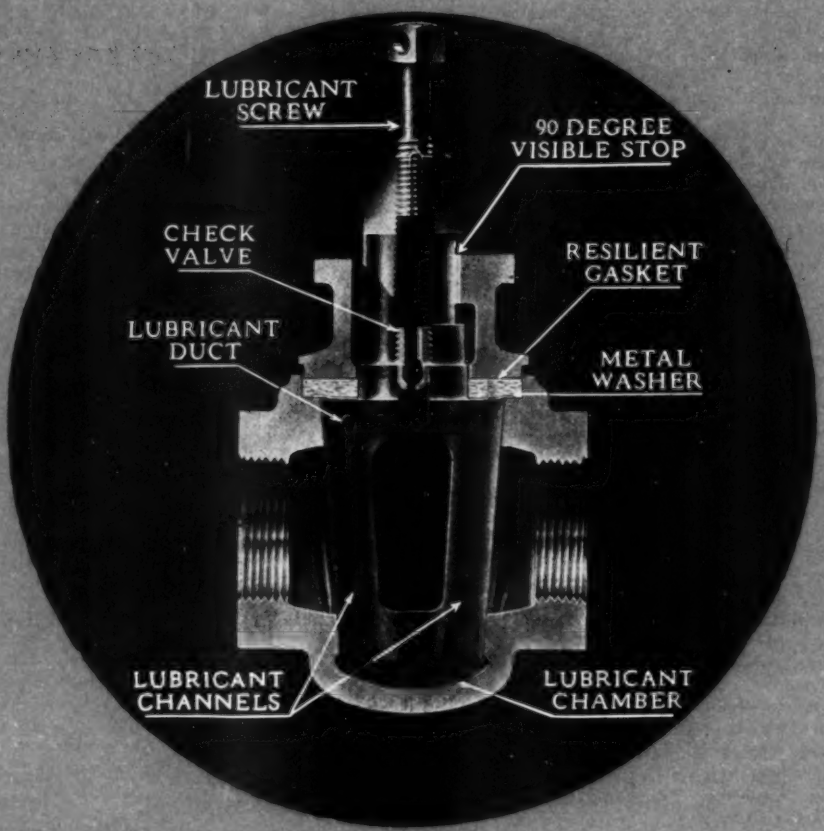

Nordstrom Valves

With the installation of these lubricated valves in your Paper Mill, leaks are permanently overcome. Lubricant under pressure (up to 2000 lbs.) is applied by a simple screw, preventing the plug from sticking and leaking. Merco Engineers have compounded special "Merco" lubricant (in stick form) for different operating services—to maintain the proper body and film at varying temperatures and in contact with different kinds of gases, acids, liquids and solutions.

Ask for our Catalog No. 6, which fully illustrates and describes the advantages of Nordstrom Valves for the Paper Industry

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WISCONSIN NEWS

The Forestry Movement

Wisconsin's program of conservation and reforestation continues to make the rapid strides characteristic of the last year. The United States Government has approved three national forest preserves within the state. One is the Flambeau area of 165,000 acres, the second is the Argonne forest in Forest, Oneida and Vilas counties comprosing 151,680 acres, and the third is the Moquah area, principally in Bayfield county, with 112,000 acres. This makes a total of 428,580 acres thus set aside for the future.

An appropriation of $575,000 has been recommended to congress by President Coolidge for the United States Forest Products Laboratory at Madison, Wis. If approved, a greatly expanded program of activities will be possible to supplement what has already been done in the interest of the paper and woodworking industries.

The Nekoosa-Edwards Paper Company is conducting a reforestation program that will assure a future supply for all its mills. All of the company's cutover lands in Ashland and Sawyer counties will be planted. The nursery has 1,800,000 baby trees, and the forestry crew will plant about 2,500 acres a year. The nursery stock will be increased by planting sufficient seed next spring to produce about 3,000,000 trees. By scientific planting, the cost has been reduced from $9 an acre to $2.69, and an average planter can place 2,220 trees in nine hours.

When the Wisconsin legislature meets this month, a bill will be up for passage permitting counties to enter lands under the forest crop law where they have been seized for delinquent taxes. The present law also will be changed to eliminate the six year period to prove titles on lands bought on tax certificates.

Mosinee Buys Stock of Bay West Paper

All of the capital stock of the Bay West Paper Company, of Green Bay, Wis., has been purchased by the Mosinee Paper Mills Company, of Mosinee, Wis. Frank P. Vaughan remains as general manager, and is treasurer of the company. The other officers are A. P. Woodson, president; H. L. Dessert, vice president; George L. Ruder, secretary.

For some time the Bay West plant has been using a large tonnage of Mosinee paper for sulphate towels, and in the merger merely brings one of its principal sales outlets into its own control with the idea of further developing a non-competitive market. The Green Bay concern was organized about five years ago and has been making napkins, crepe paper and toweling.

Fall Sessions Safety Schools Successful

Fall sessions of safety schools in various cities of Wisconsin were among the largest and most successful ever attempted. Some paper mill centers conducted them for the first time.

About 500 attended the closing banquet at Menasha, and certificates were presented to 350 who had attended regularly. George D. Barnes, secretary of the Gilbert Paper Company, acted as chairman and the principal speakers were Prof. W. C. Hewitt, of the State Teachers college at Oshkosh, and R. A. Keown, of the Wisconsin Industrial commission. Certificates given included the following company employees: Menasha Products Company 92; Menasha Wooden Ware Corporation 59; Gilbert Paper Company 52; Kimberly-Clark Corporation 26; George Banta Publishing Company 13; Bergstrom Paper Company 8; Wisconsin Tissue Mills 5; Whitmore Machine and Foundry Company 5.

At Wausau, Wis., there was an attendance of 300 at the closing banquet, representing principally the paper industry. The main speaker was Capt. P. Dinsmore Upton, of New York.

Rhinelander was among those having a safety school for the first time, and a large number of certificates were given out at the concluding banquet. Sixty employees of the Rhinelander Paper Company were included. N. F. Becker, manager of the paper company, acted as chairman, and Prof. Hewitt and Mr. Keown gave the addresses.

A record of four consecutive months of safety was completed by the Consolidated Water Power and Paper Company's mill at Biron, Wis. No lost time accidents occurred during that time. This was the best record among the Consolidated mills.

F. J. Timmerman, for seven years mill superintendent of the Northern Paper Mills, Green Bay, Wis., has been appointed as mill manager to succeed W. A. Kelly, who resigned to become vice president and general manager of the Hawley Pulp and Paper Company, Oregon City, Oregon.

Nekoosa-Edwards to Make Extensive Improvements

Still further improvements are under consideration by the Nekoosa-Edwards Paper Company, which is engaged in a building and expansion program involving expenditures of $2,000,000. A kraft bleach plant is to be built at a cost of $150,000, enabling the company to produce bleached kraft for the first time. This will be included with the mills at Nekoosa, Wis. At the mill at Port Edwards, Wis., a new boiler plant will be built at a cost of $200,000. A boiler of 850 h.p. and a pulverizing stoker are to be installed and a 210-foot smokestack will be built. This unit will supply steam power for the Port Edwards generators. Later a second boiler and stoker of the same size will be installed there to supply additional power at Nekoosa. Sometime in the future the company also plans to rebuild the boiler plant at Nekoosa along the same lines.

It is possible that the main improvement program which has been in progress for several months will be far enough along so that the Nekoosa mill can shift over in February to exclusive kraft production. Two sulphite digesters have been removed and three new five ton kraft digesters take their place. This makes a total of five kraft digesters which will be in operation, with a maximum production of 200 tons. The mill has been so planned that another digester can be added later. The four paper machines at the Nekoosa mill also are being remodeled and improved at a cost of $300,000 to equip them for high speed kraft production so that the maximum production can be 180 tons of paper daily. Enough future pulp tonnage is assured so that a fifth machine can be installed. Previously the mill was turning out 45 tons of sulphite pulp, 56 tons of kraft pulp and 110 tons of paper.

A rod mill for the refining of sulphate stock at the Nekoosa mill, is to be installed in a new wet machine room 90 by 175 feet in size. The building will be of brick, steel and concrete and will be two stories high. The estimated cost of this unit and its machinery is $312,000.

E. P. Gleason, chief engineer, is in charge of all engineering and constructive work and is assisted by the company's own staff, consisting of L. E. Smith, C. E. Youngchild, Wesley Youngchild and Frank Pelot. About 200 men have been employed on construction, and after the mills are completed, 75 men will be added to the regular mill crew.

It is the intention of L. M. Alexander, president of the company, to encourage converting plants to locate at Nekoosa to utilize the kraft output for specialties.

Among the recent deaths were those of Herman Wildhagen, of Appleton, Wis., and Jay O. Posson, of Kaukauna, Wis. Mr. Wildhagen was the architect who designed the buildings of the Fox River Paper Company, the Appleton Coated Paper Company, and others at Appleton. He is credited with introducing the Mitscherlich process of cooking and bleaching pulp in this vicinity. Mr. Posson was general manager of the municipal power and water plants at Kaukauna, Wis., where he has built up the most profitable municipal plants in the country, with the lowest power rates. A number of paper mills were supplied with power from these plants.

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SKF

Ball and Roller Bearings

Steps Taken to Complete Peshtigo Paper Deal

Necessary legal steps have been taken so that the Peshtigo Paper Company deal can be consummated as previously announced. The mills at Peshtigo, Wis., are to be purchased by a new corporation known as the E. A. Meyer Paper Company.

These steps involve the sale of the plant at a public auction on Jan. 23, 1929, making the fourth attempt to dispose of the plant and remove the receivership. Permission was granted at a hearing before Judge Henry Graass recently in circuit court at Marinette, Wis. The property is to be sold without encumbrances except for tax liens, as it was shown the court by P. M. Allen, receiver, that operation has been unsuccessful under the receivership because of the huge overhead caused by bond issues and other capital maintenance. Insufficient funds were left for purchase of raw materials after making these payments. Notice was served on all lien holders but none objected at the time the hearing was held. It was shown in the proceedings that profitable operation is possible under normal conditions, as demonstrated under the management of Mr. Allen.

Bondholders were represented at the hearing by Morris F. Fox, Milwaukee investment broker, who is chairman of a committee organized for their protection. He assured the court that he and his associates would bid for the property so that a buyer would be assured this time. It is assumed that he represents a group of capitalists who will buy the mills and then lease them to E. A. Meyer, of Menasha, who will head the new company.

The book value of the property on Feb. 5, 1927, when P. M. Allen became the receiver, was $2,264,969.90, and there were outstanding securities as follows: First mortgage bonds $1,114,000; debentures $600,000; first preferred stock $991,000; second preferred stock $230,000; common stock $228,000. Outstanding indebtedness on Dec. 11, 1928, was $1,354,359.57.

Two other men who will be identified with Mr. Meyer in operation of the mills have resigned from the Menasha Products Company, where Mr. Meyer formerly was general manager. They are Frank A. Beisel, general superintendent, and John J. Meyer mill superintendent. The latter will be plant superintendent of the new company. E. A. Meyer's successor at the Menasha Products Company is Edward Lewandowski, and E. S. LaTondress will succeed Mr. Beisel. The Peshtigo Paper Company has a sulphite mill and a two-machine paper mill.

Russell Mann has resigned as general superintendent of the Peshtigo Paper Company, and has accepted an executive position with the Cherry River Paper Company, Cherry River, W. Va.

Additional box making machinery is to be installed by the Ahdawagam Paper Products Company, of Wisconsin Rapids, Wis., early this year, according to Frank R. Walsh, secretary-manager. A year ago the plant was overhauled and machinery installed which made possible a production by one shift equal to what two shifts accomplished before. The company uses all of the board produced by the board machine at the Consolidated Water Power and Paper Company, of Wisconsin Rapids, and also buys about 75 carloads a year from other sources. The output is about ten carloads of boxes a week, using a crew of seventy men. George W. Mead is president of the company, and C. K. Crouse is sales manager.

Milwaukee to Have New Roofing Plant

The new year also brings with it a new roofing plant known as the Harshberger-Theilacker Company, to be located at Milwaukee, Wis. Through assistance given by the Milwaukee Association of Commerce, capital of $275,000 has been raised and construction of a plant is expected to start soon. The company will manufacture Asphalt composition shingles and allied products.

Norman P. Harshberger and Frederick E. Theilacker are the organizers of the new company. The former owns patents on 52 designs and composition formulas for roofing equipment. He devised some waste saving designs for shingles about ten years ago when employed as a salesman for the Barrett Company. The patents have been leased to other companies, and Mr. Harshberger has collected $118,000 in royalties.

A holding company will own the patents and lease them to the new corporation. Production probably will be started in the summer or early fall.

Another expansion move in Wisconsin is taking place at the Menasha Products Company, Menasha, Wis., more familiarly known as the Menasha Printing and Carton Company. Ground has been broken for a $75,000 factory unit of two stories, of fireproof construction. The building will house the presses of the carton department, which were crowded out of the main factory building because of increasing business.

About $60,000 in federal income taxes will be refunded to paper mills of Wisconsin, as shown by appropriation bills in congress. The list includes: Flambeau Paper Company, $17,523.79; Rhinelander Paper Company, $20,461.21; Geo. A. Whiting Paper Company, $11,165.81; Appleton Coated Paper Company, $703,80; Combined Locks Paper Co., $2,286,07; Marathon Paper Mills Co., $744.82; F. J. Sensenbrenner, $2,395.77; S. F. Shattuck, $712.50; Stevens Point Pulp and Paper Co., $900.87; Wisconsin Box Co., $2,866.04; Wisconsin River Paper and Pulp Co., $2,279.23.

Jerry Elson, formerly with the Marinette and Menominee Paper Company, Marinette, Wis., has been promoted to superintendent of the Continental Paper and Bag Corporation's mill at Rumford, Me.

MICHIGAN NEWS

Prominent Speakers Address Joint Meeting

The joint meeting of the Cost Association of the Paper Industry, Paper Technologist Club and the Pulp and Paper Mill Superintendents Association which was held at the Park American Hotel in Kalamazoo December 20th, was extremely beneficial to those who attended.

One of the principal speakers was H. H. Brown of the United States Bureau of Chemistry, who has been making special surveys for the Government on farm waste and its disposal. In the course of his remarks, Mr. Brown brought up the subject of the manufacture of paper from cornstalk pulp. He made the statement that there are approximate 100,000,000 tons of cornstalks grown annually in the United States and available for the manufacture of pulp. However, he believes it is yet too early to state definitely the value of cornstalk pulp in the manufacture of paper. The speaker also referred to problems that have arisen in the making of straw board.

Robert L. Eminger, national secretary of the Superintendents Association was present and gave a very interesting and instructive address. He referred to a questionnaire which had been sent to all mill superintendents requesting a statement of problems which have come up during the past year and solutions that have been worked out. These answers are, of course, to be passed on by executives of the company before being sent in. Mr. Eminger spoke of the next national convention which will be held in Wausau, Wis., June 6, 7 and 8, and made a strong plea that all present boost this meeting all possible.

A Paper on "Sidelights of Beating" had been prepared by Frank Libby, of the Kalamazoo Vegetable Parchment Company, but owing to his absence on account of illness this paper was read by Frank Whittington of the Sutherland Paper Company.

E. H. Gilman, for 21 years general superintendent of the Bryant Paper Company, has resigned to accept a similar

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position with the Watervliet Paper Company, where he succeeds Clarence Harter. Mr. Gilman is one of the best known papermakers in the Kalamazoo valley territory and extremely popular with all Bryant employees. Among all subordinates he is popularly known as "Dad". Announcement of his going to the Watervliet mill is made by W. M. Loveland, president of that concern. Mr. Harter's plans for the future are not known.

A concern to be known as the McKenzie Paper Company, incorporated with $50,000 capital will soon begin operation in Marshall, Michigan. Robert P. McKenzie is president of the company.

The executive committee representing Michigan paper manufacturers met in Lansing last month for the purpose of reorganizing and making more active study of efficient mill waste disposal.

Sutherland Declares 20 Per Cent Dividend

A Christmas present with a market value of approximately $2,250,000 was assured the stockholders of the Sutherland Paper Company, when directors of the company declared a 20 per cent stock dividend with a par value of $500,000 on the $2,500,000 common stock now outstanding.

The dividend is payable to stockholders of record, December, 1928. It calls for the distribution of 50,000 shares of common stock now in the treasury and increases the subscribed capital of the concern to $3,000,000. Cash dividends will remain on a 12 per cent basis, payable three per cent quarterly.

Both the Sutherland and Standard divisions, board mills and carton plants, alike, are now working to maximum capacity to keep up with orders received. During the last 12 months, the two board mills have increased their gross capacity for production of board about 40 tons a day. The carton plants have been enlarged in like proportion.

In the spring of 1918, L. W. and F. W. Sutherland organized the Kalamazoo Carton Company with a capital of $10,000. About three years ago the authorized capital was increased from $1,000,000 to $1,500,000 through the medium of a 50 per cent stock dividend. During the last year the Sutherland Paper Company took over the Standard Paper Company, issuing nearly a million in new stock, which was traded share for share for the Standard stock. At the same time, the annual dividend on Sutherland stock was increased from nine per cent and extras to 12 per cent, payable three per cent quarterly.

Since acquisition of the Standard Paper Company, the Sutherland Paper Company has made a large number of changes in the carton division of the mill. The offices have been moved to the second floor and the entire first floor added to the carton unit. This gives a large amount of additional space for stock, packing, and shipping, and furnishes a fine layout room and storage place for cuts. Much equipment has been added to the department and the output is materially increased.

Cuttings are no longer trucked by hand from the carton room to the beaters. Instead a galvanized iron flue, about 500 feet long and three feet in diameter, with a large fan attached is the means employed. Cuttings are swept into a bin in the basement and blown by a fan through the pipe to a 5,000-pound breaker beater with no loss of time and a minimum of physical exertion. Secretary F. W. Sutherland explains that this method is an important factor in keeping the carton division clean and more convenient for employees.

Announcement is made that the Company has just received an order for 250 car-loads of cartons from a large national concern. Delivery is to be made during 1929. In this connection it is reported that the business of the carton division is so good and advance bookings are so heavy that additional plant facilities will have to be built in the immediate future. Billingham and Cobb, architects and engineers, are now preparing plans and specifications for the extensions required.

PACIFIC COAST NEWS

WASHINGTON

Longview Fibre Has New Bag Machines

Machinery for a new ground wood mill to be installed at the Longview Fibreboard Company plant at Longview, Washington, was scheduled to arrive late this month. About 20 tons daily of ground wood to replace the same amount of waste paper which is used for raw material will be the capacity of the new machinery. The grinders will be operated by a 1650-hp. electric motor which will be driven by power purchased from the power plant at the Long-Bell lumber mill. Approximately 100 tons of fibreboard is made each day at the plant, the remainder of the raw material will still be waste paper. It is expected that the new unit will be in operation by the first of March.

Late in November and continuing on into December nine paper bag machines were installed by the Longview Fibreboard Company. These machines produce from ½ pound size to 30 pound size paper bags, made from kraft paper produced at the mill and use about 7 or 8 tons of paper daily. Each machine can be adjusted to make three sizes of bags. It is believed that when the operators have gained experience, the output will run between 100,000 and 150,000 bags in the smaller sizes during eight hours, and between 40,000 and 50,000 bags in the larger sizes.

Paste used in the manufacture of these bags is also made at the plant, about 1,000 pounds being the daily output.

W. E. Dodge, chief engineer of the Longview Fibreboard Company is in charge of the construction of the new building which houses the groundwood plant.

It is expected that an additional issue of $1,250,000 bonds to finance a part of the new paper mill unit now under construction by the Grays Harbor Pulp and Paper Company at Hoquiam, Wash., will be made within a short time. According to the report, the issue will be made through Blythe and Company, formerly Blythe, Witter & Company.

For several months past there has been current a rumor that a kraft mill with a daily capacity of 300 tons is to be constructed near the Columbia River in the vicinity of Portland, Oregon. The rumor has now simmered down to the point where it is said the mill with a 200 ton capacity will be erected on a 100 acre tract of land a mile and a half from Vancouver Washington. Vancouver is directly opposite Portland on the Columbia River. This report, partically confirmed by a real estate man in Vancouver, has it that the property is waterfront property and ideally situated for a paper mill. It was further stated that a group of New York bankers are financing the project and that during past month their representative was in Portland consulting with engineers. He returned to New York but is expected to return in February.

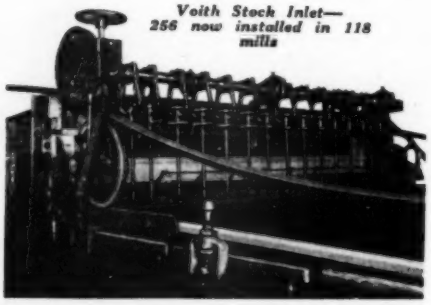
The Union Bag and Paper Corporation has completed its plant at Vancouver, Wash., and during the month of January installation of machinery has taken place. A general line of grocery bags will be put out by this plant which will employ about 100 persons. Paper is being supplied by the Columbia Pulp and Paper Company which is adjacent to the bag factory.

Announcement was recently made that the Rainer Pulp and Paper Company of Shelton, Wash., has sold 100,000 shares of Class A. common stock at $33.25 a share for the purpose of bringing about a financial reorganization. The stock was sold prior to public announcement.

At Raymond, Wash. virtual assurance of a pulp mill of a capacity of 100 tons daily when entirely completed appears certain following guarantee by the Raymond city commission of a water supply amounting to 3,000,000 gallons a day.

Martin C. Welsh, former city attorney of Raymond and rep-

Voith Stock Inlet—256 now installed in 118 mills



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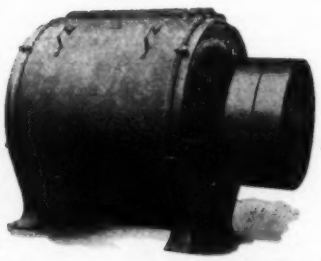
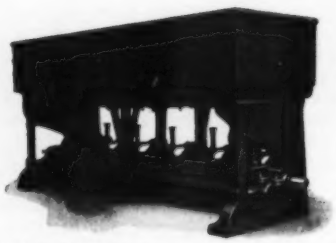


Voith Pulp Screen requires less floor space and power



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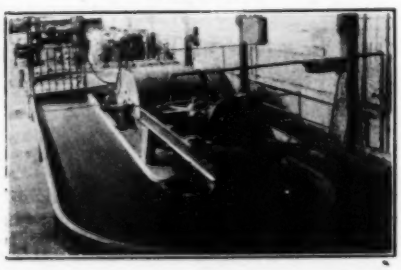
Niagara Beater—159 installed in mills throughout the country

Valley Breaker Beater—lower production costs for board mills



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Portland, Oregon

resentative of the promotors, asked for the guarantee. It is planned to erect the new plant on the site of the Siler saw mill at Raymond, the new company to operate the Siler mill in addition to the pulp plant proposed. Welsh stated that the saw mill would be used to cut hemlock commercially and also for supplying raw product for the pulp plant.

Zellerbach Increases Capital

J. D. Zellerbach, vice president of the Crown Zellerbach Company, in Seattle December 14 enroute from the enlarged plant at Port Townsend to San Francisco, stated that capital stock of his company has been increased because of possibility that Alaska development, now being studied, may call for an investment as high as $20,000,000.

One unit of the Port Townsend plant is now in operation and the second, under construction, is expected to begin production early in the year. A total of 400 men will then be employed.

At Ketchikan, Alaska, the company has studied pulp possibilities for two years.

The Tumwater Paper Mills Company of Olympia, Wash. has filed an amendment reducing its capital stock from $2,235,000 to $1,745,000.

As a result of an initial order of fifty tons of pulp from Japan, another order for 312 tons has been placed with the Fidalgo Pulp Manufacturing Company at Anacortes, Wash. It is expected that a profitable Oriental business will develop as Japan has apparently found Pacific Coast pulp fits its needs.

Publication of latest figures of the United States Department of Commerce covering the years of 1926 and 1927 show that the state of Washington is in fourth place both in manufacture of pulp from wood and wood from pulp.

G. M. Julian has been transferred to the Crown-Willamette Co. mill at Camas, Wash. from West Linn, Oregon in the capacity of office manager. This is the same position he held at the Oregon plant. He is succeeded by H. L. Day.

Wesley M. Osborne, Grays Harbor Pulp and Paper Company, Hoquiam, Washington, is an addition to the list of mill pulp-testing chemists announced in December by the secretary of the Joint Committee on Approved Pulp Testing Chemists for the Paper Industry of the United States.

OREGON

To Build Sulphite Mill on Dewar Island

Percy H. Cupper has been retained as hydraulic engineer and is also one of the directors in a new concern that has made plans to erect a 100 ton sulphite pulp mill on Dewar Island in the Umpqua River on the Southern Oregon Coast. Dewar Island is about a half mile from Reedsport. The concern has been incorporated under the name of the Umpqua Pulp and Paper mill with a capital of about $1,500,000 and W. L. Nederhoed of Portland is one of the backers. The names of others interested in the concern have not been announced.

Dewar Island, which includes 150 acres, partly solid rock and partly tidewater flats, was purchased about two months ago. It is planned to take water from Tahkenitch Lake, near the island, which has 35 square miles of watershed and 95 miles of shore line. It has been estimated that approximately 10,000,000 gallons of water could be obtained daily from this lake so that the supply would be ample for a much larger plant.

While no announcement has been made as to negotiations for a supply of raw materials, there is plenty of sitka spruce and western hemlock available in that vicinity. Logs can be floated from the Schofield and Smith rivers as well as the Umpqua.

It is understood that tentative contract for the major output of the mill is under consideration and that it will probably go to Japan. Shipments will probably be made by rail to Marshfield on the Coos Bay and then by water to foreign or eastern markets.

Temporary headquarters have been taken in the Bedell Bldg. in Portland with Mr. Nederhoed in charge. He was formerly in New York and later in the import and export business, spending eight years in the Orient where he dealt in domestic and Canadian pulp and paper.

Begin Work on Mill at Empire

Construction of the 75 ton mill of the Sitka Spruce Pulp and Paper Co. at Empire, Oregon, on the Southern Oregon coast, has begun with pilings already in and the pouring of concrete underway. J. B. West who was formerly Pacific Coast manager of the Stebbens Engineering Company, has been retained to take charge of the designing, supervising and building of the plant and E. T. Bellew who was formerly with the Kimberly Clark mills at Appleton, Wisconsin, has been retained as assistant.

While the concern holds large Sitka spruce stands in the district, it is probable that considerable sawmill waste will be utilized. At the present time construction timber is being sawed for the plant at the Johnson Lumber Company in Reedsport. C. McC. Johnson who is principal owner in the Sitka Spruce Pulp and Paper Company, is owner of the lumber company.

B. T. McBain Resigns

B. T. McBain, pulp and paper specialist with headquarters in the Spaulding has resigned his positions as a member of the board of directors, a member of the executive committee and vice-president of the Northwestern Pulp and Paper mill now under construction at Astoria, Oregon.

The Austen Company holds the contract to construct the plant upon the plans and specifications drawn up by Mr. McBain and he will continue to oversee the work, in spite of his resignation.

The work on the mill is progressing nicely and H. O. Schundler, representative for the eastern financial group which is backing the mill, returned in December after an inspection of the construction work with a satisfactory report.

The position of superintendent of all Leadbetter mills has recently been created and Carl E. Braun, formerly superintendent of the Columbia River Paper mills at Vancouver, Wash., has been given the position with headquarters in Portland. Braun held his former position for a year and prior to that was electrical engineer. Before coming to the Columbia River Paper mills he was for five years with the Crown Willamette Paper Co., at Camas, Wash. He is succeeded by Charles Frampton, who for the past year has been assistant paper mill foreman at the Pacific Mills, Ltd., Ocean Falls, B. C. This concern is also one of the F. W. Leadbetter interests.

The position of general superintendent of the Oregon Pulp and Paper Company, of which F. W. Leadbetter is president, at Salem, Oregon, left vacant the first of December by the resignation of P. J. Lamoureaux, has been filled by Joe Kaster, Jr., formerly assistant superintendent.

Announcement of plans to erect a 100 ton sulphite pulp mill on the Willamette River near Portland, Oregon, was made recently. The mill which is to cost about $3,000,000 is being promoted by H. E. Jones and Charles W. Smith of the Central Paper Company at Muskegon, Mich.

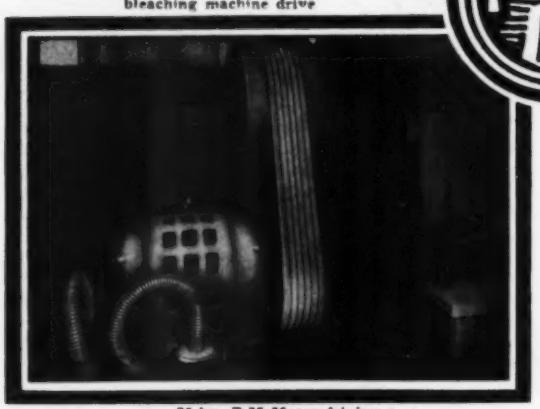
Plans and specifications for the Fir-Tex Insulating Board Company which is to be erected at St. Helens, Ore., are nearing completion and it is expected that construction will begin next month. A dock and spur are to be built first and following their completion, the construction of the mill itself will start in June, according to present plans. A. E. Millington, vice president and general manager, made a trip to San Francisco during January to open offices for the company there. The headquarters are located in Portland.

IN the Cornstalk Products Co. Plant, Fairbanks-Morse Ball Bearing Motors are withstanding moisture, steam and dust. F-M ball bearing construction, quality of insulation and liberal overload capacity have insured this plant against motor failure.

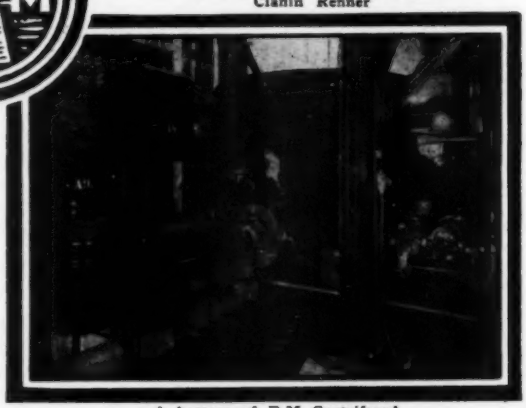
Fairbanks-Morse Stock Pumps are handling six per cent stock without clogging or separating liquids from solids.

An F-M 50 hp. motor on the bleaching machine drive

A 75 hp. F-M Motor driving a Claflin Refiner



75 hp. F-M Motor driving a Jeffery Bale Breaker



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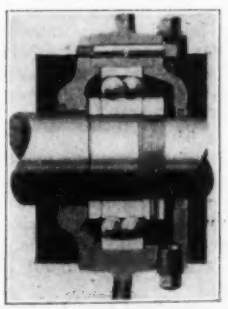
MOTORS

PUMPS



EPA18.1

Delay in the operation of the West Coast Paper Products Company at 1193 Union Avenue N., Portland, Oregon, has been caused by the hold-up in the shipment of equipment. Production will probably not begin until about the first of March. This concern was incorporated in early fall by W. E. Stoppenbach, Sanderson Reed and Arthur M. Mock with capital listed at $25,000.

CALIFORNIA

Report of Paper Industry on Coast

An extensive report of the paper industry on the Pacific Coast was filed November 24th, 1928 with the Industrial Committee of the Chamber of Commerce of San Francisco. This report was prepared and submitted by W. B. Maxwell, a member of the committee, who spent months in the compilation of this data.

The report makes reference to records of the Paper Division, Bureau of Foreign and Domestic Commerce during 1927, which reveal that San Francisco was a leader in the export of the following items: greaseproof, surface coated book paper, tissues, boxboards, paper board and strawboard, paper bags, boxes and cartons. Among the items fabricated within the metropolitan area of San Francisco the following are listed in the report: chip board, boxboard, wallboard, roofing paper, carbon paper, wax paper, envelopes, drinking cups, candy bags, paper towels, mailing tubes, paper cans and containers, mounting board, corrugated paper and shipping bags.

The survey disclosed that the printing and publishing industry occupies first place among San Francisco's industries. Figures for 1927 show that as for value of product printing, book-binding and publishing lead the list, with a total of $41,515,590.

An interesting reference is made to Pacific Coast conditions in the paper industry. During the latter part of 1926 and for the entire year 1927, $27,000,000 was expended on paper mill expansion and establishment of new mills. An additional amount of $36,700,000 had been planned for similar work as yet uncompleted at the close of the year. The chief reason for this remarkable growth is the fact that nowhere in the United States stands such a vast untouched supply of timber. For this reason alone the Pacific Coast will continue to develop as an increasingly important factor in the industry.

Malcolm Otis has been made manager of the Floriston, Calif., mill owned by the Crown Willamette Company. He was for a number of years associated in the engineering staff at the company's mill in Camas, Washington.

International to Offer Rights

The International Paper and Power Company is expected soon to give rights to its common stockholders of all classes. Holders of International Paper Company common stock, of which less than 8 per cent remains outstanding, will be entitled to the rights only following the exchange of their shares for common stock of the new company. The rights will take the form of an offering of about 1,500,000 Class C shares of International Paper and Power Company at $10 a share on the basis of one new share for each two common shares held, whether Class A, B or C.

The company is expected to derive about $15,000,000 of new capital from the offering, which will provide a part of the funds required for the acquisition of additional stock in the New England Power Association. The company is understood to have an option for a block of the association's stock amounting to $35,000,000. When this block is required International Paper and Power Company will own 81 per cent of the voting stock of the association.

Stabilization of the paper industry in Canada will be carried out by mill owners and ministers of the provinces of Quebec and Ontario. At a recent meeting of these officials, George M. McKee, formerly of the Algonquin Paper Corporation of Ogdensburg and now manager of the Port Alfred interests in Canada attended.

NORTHERN NEW YORK NEWS

Coty Bag Corp. to Lease Plant

The Coty Bag Corporation, of Watertown, recently organized, will in the near future begin the manufacture of five walled pasted bags for cement, lime and plaster, which will necessitate the employment of about 100 men.

Alfred C. Coty, president of the Coty Machine Company, manufacturers of bag machines and head of the Coty Bag Corporation, has announced that the Coty Bag Corporation is making negotiations with the Airbrake Company for the leasing of its building. This building is 800 feet long and 100 feet wide, and was used during the World War as a gun carriage shop. The Coty Machine Company has used this plant for several years for assembling bag machines.

The new company will not market the bags, but have entered into an agreement with a nationally known sales company. It is hoped to take over the new plant during January.

The corporation will hereafter operate on a capitalization of 16,500 shares, consisting of 1,500 shares of preferred at $100 par value, and 15,000 shares of common having no par value. The company formerly capitalized at 5,500 shares, 500 of which were classified as preferred and 5,000 shares common. Papers regarding this step in expansion of stock have been filed with the Department of State.

Progress in Forestry

Professor J. A. Cope, forestry expert of the New York State College of Agriculture at Ithaca held a conference with Dr. Richard Eddy Sykes, president of St. Lawrence University at Canton and other St. Lawrence county men interested in reforestation for the purpose of devising means to further the forestry educational program in Northern New York.

In the last two years the number of community or municipal forests has increased from 217 to 317 showing an average yearly increase of 50 or at the rate of one new municipal forest project each week, according to figures compiled by Conservation Commissioner Alexander McDonald. In these projects 20,817,500 trees have been planted of all varieties furnished by the New York State nurseries. During the past year 1928, 24 new village forest projects have been initiated, 12 new school district forests, four county forests, three town forests and one city forest, the first plantations made aggregating 596,000 trees. The rapid growth of municipal and community forests in the last few years has been one of the outstanding accomplishments in the field of conservation.

According to the report of Conservation Commissioner Alexander McDonald to be given before the state legislature a new low record of forest fire damage in the state will be given. The report will show the lowest burned area in the Catskill and Adirondack mountains being less than 1300 acres, representing 1/50 of one per cent of the total protected area of 7,370,000 acres included in the Adirondack and Catskill forests. A record of no fires burning in the mountainous areas of Washington county. The burning of only nine acres of state owned land within the Adirondack and Catskill mountain areas of the state, where the state holds title to over 2,000,000 acres of timber land.

Eight hundred and thirty forest fires have been extinguished by employees of the Conservation Commission. These fires were scattered over 16,500,000 acres of land. These fires burned a total of 38.751 acres with damage estimated at $8,725 to timber and $35,000 to buildings.

Considerable loss was caused November 30 to the substation of the National Paper Products Company when a short circuit in one of the transformers started a fire.

The Taggart Paper and Bag Company at Oswego has placed an order with the Dilts Machine Company, Inc., of Fulton, for six large beaters. The new beaters to be installed will bring the total up to 20 in the mill and will tune up the pro-

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PAPER MILL MACHINERY

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And there are other results even more important.

Hydration is more complete. Brushing under the roll is more thorough. The primary objects of all beating are better accomplished.

Mid-West Hi-Speed Beaters are designed expressly for handling stock at heavy densities. Their capacity is several times that of the old, slow moving Hollander.

Correct design has greatly lowered the power required per pound of furnish. Fine workmanship and perfect installation assure continuous operation and perfect satisfaction on your part.

The Mid-West story is simply told in facts we would be pleased to place before you. Send the coupon below.

THE MIDWEST MACHINE COMPANY, DAYTON, OHIO

CLIP THIS COUPON—

THE MIDWEST MACHINE CO.
DAYTON, OHIO

Gentlemen:

Without obligation, send us details and prices on items checked below:—
☐ Midwest Hi-Speed Beaters ☐ Wood ☐ Iron Tub Construction.....lbs. capacity.
☐ Rebuilding our old ☐ Wood ☐ Iron Tub Beaters into Mid-West Hy-Speed Type.

Name.....

City.....State.....

By.....

duction output of the mill to 350,000 bags daily. Steel work and concrete foundations have already been laid at the mill. New bag making machines are also being installed in the plant.

Traffic Notes

Joseph A. Quinlan, traffic manager of the St. Regis Paper Company, has appeared in Washington, D. C., before the Interstate Commerce Commission concerning the reduction in freight rates on southern clay. A reduction of 85 cents per ton has been sought. The rate for Northern New York was from $9.13 to $8.28 effective December 12. Glens Falls district has asked for a rate reduction and Mr. Quinlan asked for a reduction comparing to the one given Glens Falls.

Clarence C. Smith, secretary of the New York Development Association, was in Sandusky, Ohio, during December, where as a representative of the association he interceded in behalf of the Hinde-Dauch Paper Company in a case which involved the freight rate on box board, which is made at the Watertown plant of the company, to points in the eastern territory of the United States.

The Oswego Falls Corporation of Fulton, N. Y., is contemplating the building of a new seven story building. The building will form a part of the Sealright Company, makers of paper containers, and the auxiliary plant of the Oswego Falls Corporation. The building will be the largest of the plants of the company. Operation in the new paper can department of the Sealright Company will start this month. The company also plans to enlarge the bottle cap department in the spring.

Federal Judge Frederick H. Bryant has reserved decision on a motion made by the Federal Government to strike out affirmative defenses set forth by the defendants in their answer to the suit brought to break an alleged monopoly in union-made paper. The companies concerned as defendants are Alden Paper Company of Holyoke, Massachusetts, and William R. Smith, Frank P. Barry and Mathew Burns of Albany, head of the International Brotherhood of Papermakers at Albany. The government charges that they conspired with the Alden company to monopolize the interstate trade of union-made paper.

Sometime this month the Bagley and Sewall Co., Watertown, will complete construction on a 304 inch paper machine, the largest in the world. A portion of the machine has already been shipped to the Great Lakes Pulp and Paper Co. at Fort William, Ont. The company is also engaged in construction work on two other machines, one a 202 inch bond paper machine for the Gray Harbor Pulp and Paper Co., of Hoquiam, Wash., and the other is a 248 inch kraft machine for the National Paper Products Co. for its plant at Port Townsend, Wash. Parts of these machines have already been completed and shipped.

NEW YORK CITY NEWS

Supply Dealers Elect Officers

The annual meeting of the New York Association of Dealers in Paper Mills' Supplies, Inc., was held at Conte's Restaurant, 432 Lafayette street, New York, on the evening of December 12, at which Albert Lorenz, of D. Benedetto, Inc., dealers in papermakers' supplies of 383 Water street, New York, was elected president for the ensuing year, succeeding Joseph P. Gaccione, of Gaccione Bros. & Company, Inc., who had served two years as chief executive of the organization. Andy C. Costarino, of Hicks-Costarino, Inc., of Brooklyn, was elected vice president, while Walter H. Martens, of George W. Millar & Company, Inc., was re-elected treasurer, and Alfred J. Moran, of A. J. Moran & Company, Inc., was again chosen secretary.

The meeting was well attended, and it was voted to appoint a committee of five which will investigate the various problems and difficulties existing in the paper stock trade in New York and seek ways and means of solving these vexatious matters. Details also were arranged at the meeting for the twenty-first annual banquet of the association which will be given on the night of February 20 next in the Commodore Hotel during paper manufacturers' convention week in New York.

The Certain-teed Products Corporation, manufacturer of roofing and building paper and felts, announced on December 5 that it had omitted the quarterly dividend of $1 on its common stock due at this time. The regular quarterly dividend of $1.75 was declared on the preferred stock, payable January 1 to holders of record December 18. "It is understood," the company's statement said, "that there is little improvement in competitive conditions and that with unsatisfactory profits for the year to date, the directors deemed it for the best interest of stockholders to omit the common dividend."

The Frank Paper and Twine Company, Inc., of New York City, is the name of a new concern just incorporated under New York State laws to do a general merchandising business in paper and twine. The corporation has 100 shares of no par common stock, and Frank Meehan, L. E. Meehan and Robert Meehan, of 246 Fifth avenue, New York, were the incorporators.

Jacob Seibert Coming to N. Y.

The kraft paper business of the International Paper Company is expanding so rapidly that on January 1 the company will bring to New York City, Jacob Seibert, its western representative for this class of paper, to handle the sales of its southern kraft division.

With a daily capacity of 530 tons of kraft paper and board, the International is now reputed to be the largest manufacturer of this grade of paper in the world. In a little over three years the company has acquired two kraft paper mills in Louisiana and another in Mississippi, has built a fourth mill in Arkansas, and is now erecting its fifth kraft paper mill in Alabama, and has decided to build a sixth mill in the Carolinas. With the exception of one of the Louisiana mills, which was bought in July, 1925, this expansion has occurred in the past twenty months. When its new mills in Alabama and the Carolinas are completed, the International will have a daily capacity of about 900 tons of kraft paper and board.

Mr. Seibert has long been a prominent figure in the sales branch of the paper industry, and when he reaches New York he will make his headquarters in the home offices of the International in this city.

Paper hats, such as are used by children and also by adults at carnivals, parties, etc., are held to be dutiable as manufactures in chief of paper rather than as toys, at a duty of 35 per cent instead of 70 per cent ad valorem, in a decision rendered by the United States Customs Court in this city on a claim filed by the Sunrise Company, of New York.

The Frank Squier Paper Company has moved to more convenient quarters at 369 Lexington Ave., New York, at Forty-first street. The company's new telephone number is Ashland 0798.

Another step in the centralization of the St. Regis Paper Company's offices in New York City has come with the removal of offices of Carl B. Martin, secretary and treasurer of the company with offices formerly in Watertown and David A. Fleischman, manager of the bag department at the Taggart Bag Factory at Oswego. Mr. Martin, who has been with the company for 15 years, has under his direction the woodlands of the St. Regis company in this country and Canada. It is expected that gradually the entire offices of the company in Northern New York will be transferred to New York City.

Installation Operating Costs

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CONDITIONING AIR PRESERVING FELTS
IMPROVING PRODUCTION & WORKING CONDITIONS

Aside from its investment value in effecting positive utilization of *waste* heat, the Briner Economizers method of reducing steam requirements proves the most economical in first as well as operating costs for securing such savings.

Utilizing Waste Is Effective Saving!

During cold weather, hot vapor from your machines is really an asset rather than an objection, providing this vapor is expelled only after its heat is fully utilized to heat the incoming air for ventilating the machine room. Mills recovering and utilizing this waste heat during the cold weather with Briner Economizers are effecting tremendous savings on their steam costs.

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Canadian News

The Importance of Cellulose

On December 5th, Prof. Harold Hibbert spoke to the members of the Montreal Section of the Society of Chemical Industry about the importance of cellulose in our every day life. This was the second of a series of four lectures to be given before the Section by members of the staff of the Department of Chemistry of McGill University. After a brief introduction on the chemistry of this most interesting substance, the speaker dealt with its chief applications in the peaceful arts, showing what a very large place it occupies in modern civilization.

Dr. Hibbert, who has taken no mean part in the work done on cellulose in recent years and who is recognized as one of the greatest authorities on the subject, explained in a clear and simple manner how the fascinating but arduous problem of determining the structure of cellulose had been approached and the progress accomplished to date. This is one of the major problems at present under investigation at the recently opened Cellulose Institute in Montreal, and already some very valuable and interesting results have been obtained. Dr. Hibbert referred to some interesting work in progress at the Institute on the action of certain enzymes on sugars. It has been found possible to obtain a substance, designated as "gum levan", which has a composition corresponding to the empirical formula $C_6H_{10}O_5$ and which appear to be closely related to cellulose. On the other hand, a different enzyme, extracted from the intestinal tract of the snail, has been shown by Karrer to posses the property of converting cellulose into glucose: this property is now being utilized in the determination of lignin. Further work in this direction is handicapped by the absence of a well trained bacteriologist on the staff of the Institute, and there would undoubtedly be a splendid opening for the right man in this position.

Turning next to the application of cellulose, the speaker referred to cotton and wood as the two main sources of raw material at the present time, while straws and grasses, though but little used just now, have tremendous possibilities. Living plants constitute the most efficient and economical chemical works at our disposal, taking the raw material (air, water, carbon and solar energy) which are supplied by nature in unlimited quantities and free of charge, and elaborating them into cellulose without the intervention of human agency.

Cotton finds its most extensive application in the textile industry, where it is used in its natural state after a slight purification to remove the small amount of impurities present, but it also serves as a raw material for a number of industries, which, though of less magnitude and economic importance than the textile industry, are of even greater interest to the chemist than the latter. The nitration of cotton was begun over 100 years ago and was rapidly developed by the governments of various countries for defensive and offensive purposes. In more recent years, nitrocellulose has found numerous applications in the peaceful arts, such as the manufacture of rayon, artificial leather, celluloid, lacquers and varnishes, photographic films, rifle powders, mining explosives, etc. These were described at length by H. LaTourette at the November meeting of the Montreal Section of the S.C.I. However, a serious competitor has arisen in the form of acetylcellulose, which possesses many of the valuable properties of nitrocellulose without the drawback of the high degree of inflammability of the latter; and at the present time this latest comer is invading many of the fields where, up to a few years ago, nitrocellulose reigned supreme. Nor is the end yet in sight as new cellulose esters are being discovered almost every day; and though today they are mere laboratory curiosities, tomorrow they may become important industrial materials. Another young and rapidly growing cellulose industry is the manufacture of vulcanized fiber which is finding numerous applications for electrical and engineering equipment, in the automobile and airplane industries, for the manufacture of containers, trunks, pails, etc.

In Canada, wood is the outstanding source of cellulose, and our large, but by no means inexhaustible, timber resources have enabled us to develop our cellulose industries at a rate which has made the world gasp in astonishment. The expansion of our newsprint production has overshadowed the by no means negligible developments along other lines; but wood pulp is a raw material which finds many other uses besides the manufacture of paper. Wood cellulose is essentially the same chemical compound as cotton cellulose and when chemical properties alone are of importance it is equally as suitable. In practice, the impurities which always accompany cellulose in wood pulp have prevented the use of the latter in place of cotton for certain purposes; but new purification processes are continually being found which is steadily increasing the field of application of wood pulp.

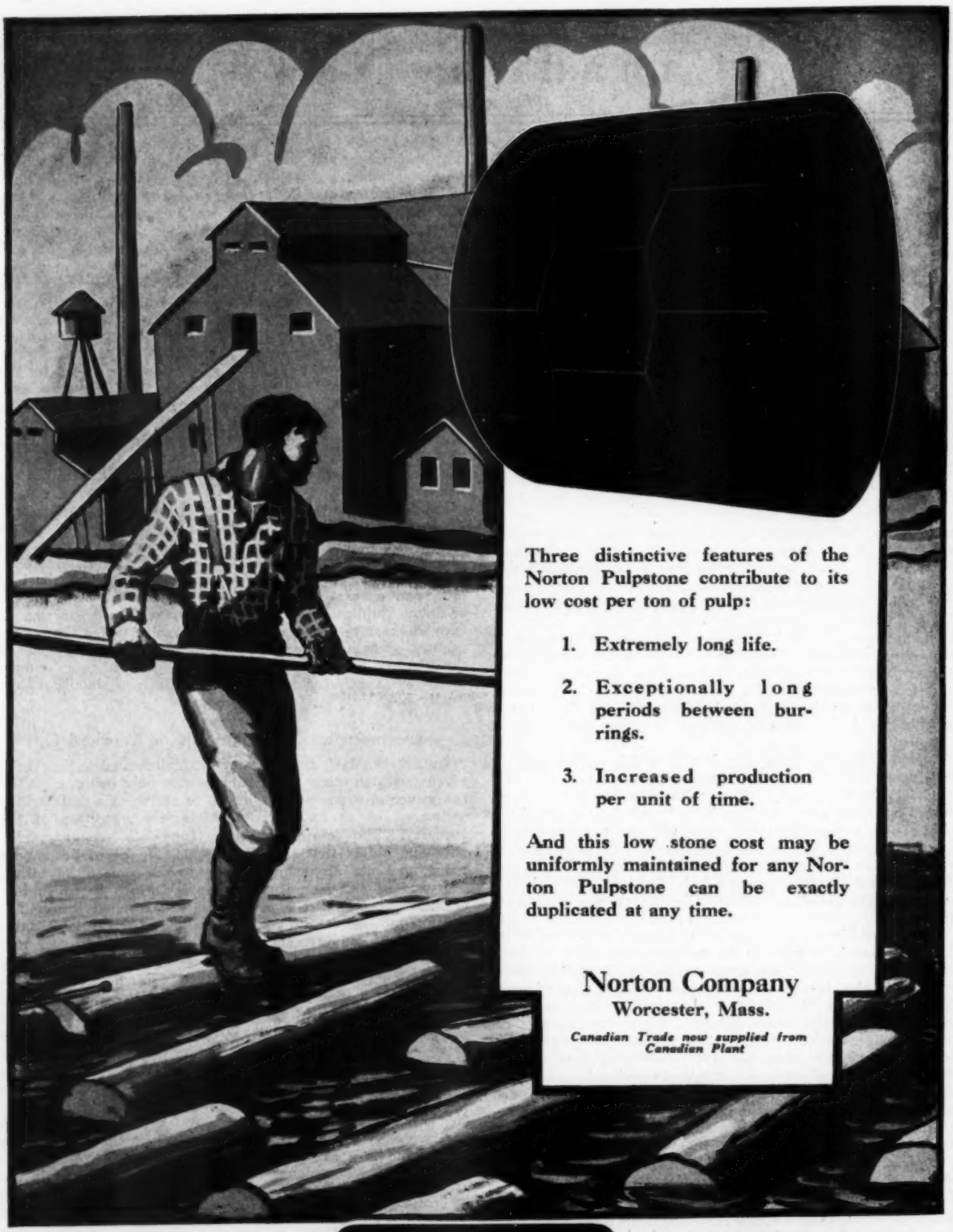
Finally, though straws and grasses are not, at the present time, being used to any considerable extent, serious efforts are being made in this direction. In Germany during the war chopped straw was treated with alkali to increase its digestibility and used as a cattle food. In the course of the last few years several mills have been built for the manufacture of straw cellulose for use in fine papers, the conversion of corn stalks into high grade cellulose suitable for the manufacture of fine papers or of rayon has practically reached the stage of commercial production, and several years' efforts to evolve a satisfactory process for pulping bamboo have finally been crowned with success.

Agreement on Newsprint Being Worked Out

During the last month, very little information has been given out regarding the arrangements now being made by the principal newsprint producers to arrive at a satisfactory setlement of the present unsatisfactory condition of the industry. The details are being gone into very carefully, with the object that the work done may be of permanent value, and not applicable merely to the present situation. The variety and magnitude of the factors to be taken into consideration make the problem a very arduous one. The attitude of United States publishers and of the United States government, for instance, must be reckoned with, as well as the apportioning of the Hearst contract entered upon by International Paper at a price which, it is said, could not be accepted by a number of mills except at a heavy financial loss. Again, some of the mills are now operating at full capacity and are said to have booked sufficient orders to keep them running at this rate for the whole of 1929. Another fly in the ointment comes from the fact that so far only Quebec and Ontario companies have been a party to the conferences, and the governments of other provinces, particularly New Brunswick and Nova Scotia, have made it pretty plain that they do not intend checking the development of the industry in their respective provinces, and the construction of several large mills is already under way in the Maritimes.

About the only result which has been definitely announced so far is the formation of a new organization, The News Print Instiute of Canada. Percy B. Wilson, former president of the Canadian Pulp and Paper Association and former vice-president of the Spanish River Pulp and Paper Mills, is the executive head of this Institute, of which there are a number of important counterparts in the textile, iron and steel, and other industries.

In his annual address as president of the Bank of Montreal,



Three distinctive features of the Norton Pulpstone contribute to its low cost per ton of pulp:

1. Extremely long life.
2. Exceptionally long periods between burrings.
3. Increased production per unit of time.

And this low stone cost may be uniformly maintained for any Norton Pulpstone can be exactly duplicated at any time.

Norton Company
Worcester, Mass.

Canadian Trade now supplied from Canadian Plant

Grinding Wheels
Grinding Machines

NORTON
PULP STONES

Refractories - Floor and Stair Tiles

Sir Charles B. Gordon, made the following observation on the conditions in the pulp and paper industry in Canada: "It is a matter or regret that over-production, with consequent competition and price-cutting, has checked the abounding prosperity of the newsprint industry, but there is no occasion for surprise at a situation which always arises when supply outruns demand. While the field has been too raidly occupied, the industry is firmly established and its permanence is assured. Adjustment to the present acute condition brought about by excessive producing capacity may be expected, together with a cessation of the construction of new mills until consumption overtakes supply."

According to I. H. Boas, chief of the Division of Forest Products of the Council of Scientific and Industrial Research of Australia, Canada's export of pulpwood to Australia will soon meet with stiff competition among the papermakers in the latter country. Mr. Boas, who arrived in Ottawa a short time ago, said that after years of experimenting Australia had succeeded in converting its hard woods into a high grade of paper, an achievement which had been considered almost impossible a few years ago. While in Ottawa, he conferred with Government officials concerning forest conservation methods.

Application for Stone Duty Meets Opposition

Canadian stone producers, chiefly in the provinces of Quebec and New Brunswick, appeared before the Advisory Board on Tariff and Taxation at Ottawa last month, to ask for a duty of $1 per ton against lime rock and marble coming in from the United States. The application was made by J. S. Clark, of St. George, N. B., and by the Winnipeg Supply and Fuel Co., through D. C. Henderson.

In opposition to the application was a lengthy memorandum from the Canadian Pulp and Paper Association, submitted by John Bain, of Ottawa. In anticipating the opposition of pulp and paper manufacturers, the stone producers declared that a duty of $1 per ton on limestone would mean very little, if anything, to the cost of paper, as the duty requested would not increase the cost of paper by more than 10 cents per ton. Pulp mills, the stone producers' brief said, use 350 pounds of limestone for each ton of sulphite produced, and of the latter only about 25 per cent is used in the manufacture of news print paper, by far the most important grade turned out by the Canadian paper mills. The application is now under advisement by the Board.

QUEBEC

Gatineau's New Storage Dam

Gatineau Power Co., controlled by Canadian Hydro-Electric Corp., a Canadian International Paper Co. subsidiary, has commenced construction of another storage dam on the Gatineau River. Work will be carried on throughout the winter, and it is expected that the dam will be completed and ready for operation next summer.

The new dam, storing the waters of Lake Cabonga, and the present Mercier storage dam will form reservoirs ranking with the large water-storage systems of the world. The two reservoirs will have a combined capacity of 145 billion cubic feet, or one and two-thirds times that of the reservoir created by the famous Assouan dam on the Nile River in Egypt.

Located in the heart of one of the great timberland areas of Canadian International Paper Co., the Cabonga dam will be forty-six miles above the Mercier dam and will form a reservoir of 45 billion cubic feet capacity, draining a territory of 1150 square miles. The new reservoir will materially assist the Mercier reservoir in regulating the flow of the Gatineau River on which the Gatineau Power Co. has completed three hydro-electric plants within the past two years.

The sixth annual dinner of Canadian International Paper Co. at Three-Rivers was another red-letter occasion. It was presided over by Frank Haney, the paper mill superintendent. Following the singing of the National Anthem, the chairman called upon C. W. Walker, manager of the mill, for a few words. The latter, who was very enthusiastically received, dwelt at some length on the happy relations existing all around between employees of the big company. Other speakers included: Robert F. Grant, the veteran manager of the lumber division; F. R. Hyatt, assistant paper mill manager; W. P. Grant, M. P. P., manager of the Bastican lumber mill; C. B. Smith, local superintendent of the Canada Iron Foundries, and R. Collins, general superintendent of the Wayagamack Pulp and Paper Co.

Walmsley-Dominion Engineering Merger Assured

The merger of Chas. Walmsley & Co. (Canada), Ltd., and Dominion Engineering Works, which was reported in these columns last month, is now practically accomplished. A statement made by G. H. Duggan, president of Dominion Engineering, that his company guaranteed the completion of the obligations of the Walmsley organization is accepted as an official announcement that the deal, which had been rumored and expected for some weeks, has been consummated.

The deal should be of very considerable advantage to Dominion Engineering giving it manufacturing rights to many well known pieces of machinery of proven value, such as the continuous wood grinder (combining the best features of the Voith and Warren grinders), the Kilberry suction roll, the Minton vacuum dryer, the Walmsley roll grinder, and others. Besides the physical and manufacturing advantages coming to Dominion Engineering, Walmsley has built up a very fine engineering and sales organization, and the combination should even more definitely assure Canada the foremost position in the manufacture of pulp and paper making machinery.

The amalgamation involves the adjustment of several manufacturing arrangements, as Walmsley is at present building two Minton vacuum dryers for the new machines being installed by Price Bros., at their Riverbend mill, two 234-inch news machines for the Mersey Paper Co., an 80-inch fine paper machine for Rolland Paper Co., a number of continuous grinders, and several orders for rebuilding and modernizing parts of existing machines.

In this connection, it is interesting to note that L. R. Wilson has been appointed vice-president in charge of operations of Dominion Bridge Co., the parent company of Dominion Engineering.

Meeting of Quebec Forestry Engineers

At the meeting of the Quebec Forestry Engineers, held in Quebec on December 19th, the two principal speakers were Prof. Joseph Cathala, head of the School of Chemistry of Laval University, and Hon. Honoré Mercier, Quebec Minister of Lands and Forests. Prof. Cathala stated that the prosperity of the wood pulp industry will be maintained only if the cost of pulp is lowered by more remunerative use of the wood components other than cellulose; and he warned his hearers that competition in the pulp industry would soon be severe on account of the development of processes for the production of pulp from more rapidly growing plants than trees.

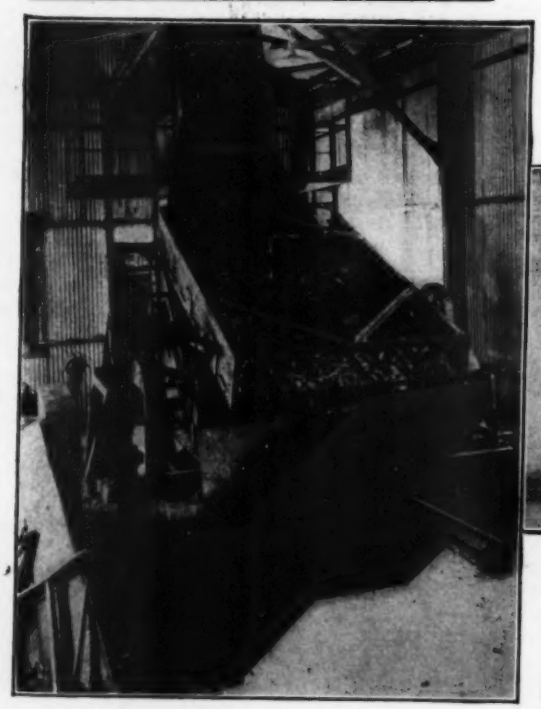
In a brief address, Hon. Mr. Mercier informed the engineers that organization of a research bureau, with the necessary equipment and a competent staff, would materialize during the early months of the present year. The minister looked with optimism toward the future of the forests of the province, predicting that these forests will never be depleted so long as sufficient protection against the fire hazard is maintained.

Higher Earnings for Wayagamack

A fine showing is made by Wayagamack Pulp and Paper Co. in its annual report for the fiscal year ended November 30th, 1928, net earnings available for dividends on the capital

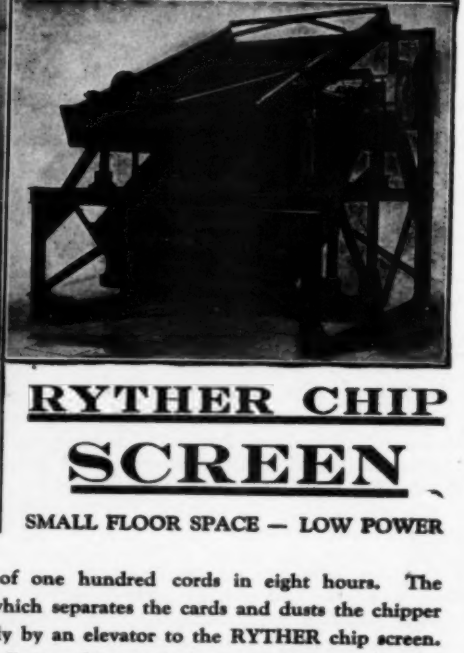
RYTHER AND PRINGLE COMPANY
CARTHAGE N.Y.

CLEAN CHIPS



THOROUGHLY SEPARATED
AND ACCURATELY GRADED

CLEAN PULP



RYTHER CHIP SCREEN

SMALL FLOOR SPACE — LOW POWER

The woodroom described handles a daily burden of one hundred cords in eight hours. The chipper is fitted with a Wood Ideal Chip Breaker, which separates the cards and dusts the chipper flow. The product of the chipper is delivered directly by an elevator to the RYTHER chip screen. The screen is set for three classifications, namely: slivers, chips, and dust. The rejects from the sliver table are delivered into a crusher and returned with the chipper flow and re-screened. This system constitutes an economical arrangement because there is no wood loss from slivers and knots.

FOR CANADA REFER

CANADIAN INGERSOLL-RAND COMPANY, LIMITED
10 PHILLIPS SQUARE, MONTREAL, P. Q.

stock being somewhat higher than those for the preceding year, this despite the unsettled conditions prevailing in the newsprint industry during the period. This improvement in earnings is understood to be directly due to the favorable situation in the sulphate pulp and kraft paper market, which represent the major portion of the company's output.

The healthy balance sheet position has been further strengthened, net working capital being only slightly lower, while the formidable surplus and general reserve have been added to substantially, being now equivalent to over $45 a share on the 100,000 shares of capital stock outstanding. Earnings per share from operations are slightly higher at $7.46, as compared with $7.28 for the year 1927. During the course of the year the company's share capital was increased to 133,333 shares. The additional capital was payable in installments, so that the company only obtains the benefit of the full proceeds in its next fiscal year. Profit from sale of capital assets (Gaspé timber limits), however, provides a further $6.24 a share on the outstanding stock, but practically all of this has ben transferred to general reserve.

Erection of Maclaren Mill to Proceed

Albert Maclaren, president of the James Maclaren Co., of Buckingham, has intimated that this company intends going on with the erection of a newsprint mill as originally planned. The company claims it has a right to erect a paper mill and convert its pulp into paper without receiving permission from the Quebec government or any other government. It further contends it has the privilege of applying its water powers to the production of paper or to such other uses as it thinks proper.

The company some time ago applied to the Quebec government for permission to erect a storage dam on the Lièvre River many miles above its water power sites on terms similar to those that have been granted elsewhere to the owners of water powers. The company has been given to understand that it can secure such permission on the usual terms, but only on condition that it makes no paper for two years, when it is thought that the paper industry will have recovered from the difficulties under which it is now operating.

Unhampered in the exercise of its rights, the James Maclaren Co., while not looking for favors, intends to erect a paper mill, develop its water powers, convert its pulp into paper and utilize to the best advantage its extensive reserves of pulp wood.

At a special general meeting of shareholders of Laurentide Power Co. held in Montreal on December 18th, the offer of Shawinigan Water and Power Co. to purchase the entire assets of the company was formally accepted. Laurentide Power shareholders had two alternative offers open to them, one providing for a cash payment of $227.22 per share, and the other for $151.67 per share in cash and 1-1/10 shares of Shawinigan Water and Power Co. stock. The meeting, which was largely formal, marks the passing from existence of the old Laurentide Co., which formerly operated Laurentide Paper and Laurentide Power.

Drury Heads Eddy Company

Victor M. Drury, of Montreal, prominent in the business life of Canada as a member of various important directorates, including Canadian International Paper Co. and Canadian Vickers, Ltd., has been chosen president of the E. B. Eddy Co., Ltd., of Hull, to succeed the late George H. Millen.

Charles H. Millen, general superintendent of the E. B. Eddy Co. and a son of the late president of the company, has resigned on account of ill health, after nearly forty years in the employ of the company.

All four machines at the mill of the St. Lawrence Paper Mills, at Three-Rivers, are operating at capacity and will continue to operate fully during the present year. Separate contracts have been arranged to take care of the output of the two new machines which the company is installing. The

Waldron Machines 1827

For 102 Years

WALDRON MACHINERY

for Paper Converting

In no other field of manufacturing does production efficiency, operating economy and salable quality of product depend more upon the character of the processing machinery than in paper converting. It is the necessary element of character—accuracy in design and operation—that has maintained Waldron leadership in machine building for well over a century.

Coating Machines
Rotary Printing Machines
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Gumming Machines
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Specially designed machinery for processing paper

The benefit of this more than a century of knowledge and experience in Paper Converting problems is available to you through our Engineering Departments. Consult us—without obligation.

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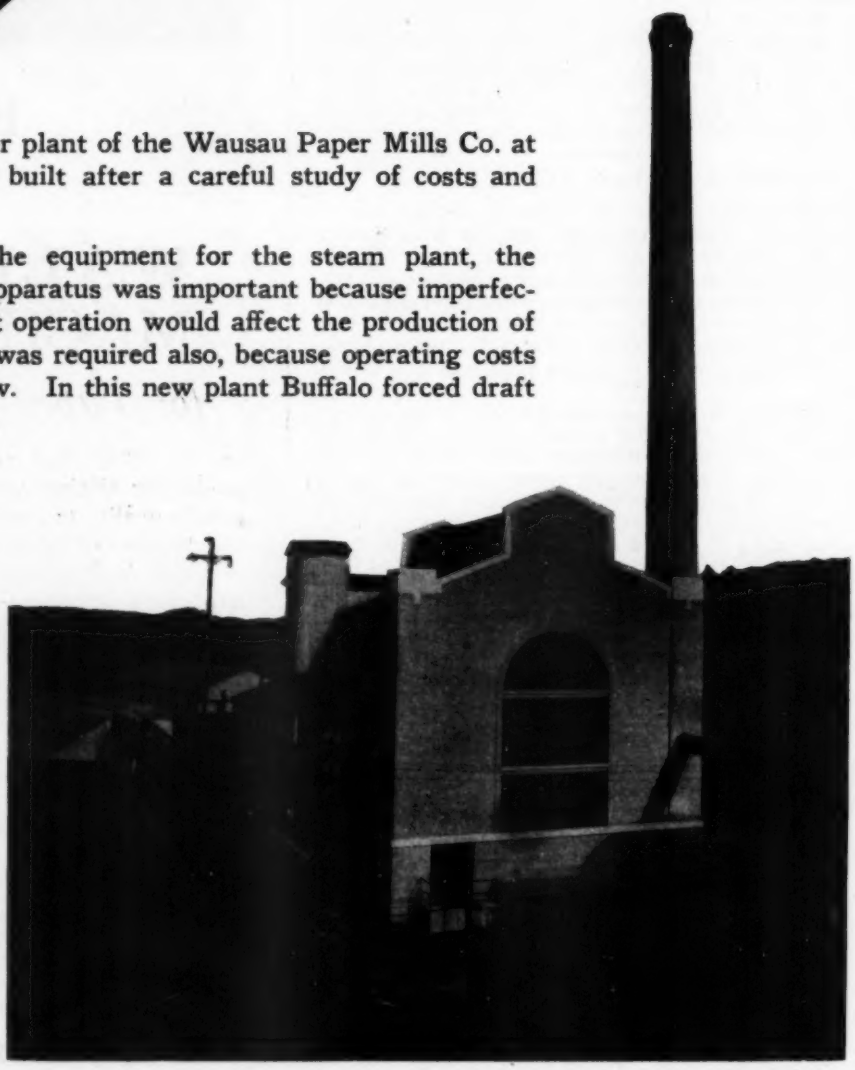
WALDRON
Paper Converting Machinery

Wausau Mills install "Buffalo" forced draft fans

The new power plant of the Wausau Paper Mills Co. at Brokau, Wis. was built after a careful study of costs and conditions.

In selecting the equipment for the steam plant, the reliability of the apparatus was important because imperfection in power plant operation would affect the production of paper. Efficiency was required also, because operating costs were to be kept low. In this new plant Buffalo forced draft fans were installed.



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Buffalo, N. Y.

In Canada: CANADIAN BLOWER FORGE CO., LTD., Kitchener, Ont.

"Buffalo"—Heating, Ventilating and Mechanical Draft Apparatus

contracts covering the output of the new machines cover a ten-year period. The first new 75-ton machine is scheduled to go into operation this month, and the second one in February.

H. E. Bates, of Grand 'Mère, has been appointed superintendent of the Belgo Division of the Canada Power and Paper Co., succeeding Maurice Neilson who has moved to Montreal.

The old Chandler mill, the property of the St. Lawrence Pulp and Lumber Corp., now in bankruptcy, are to be sold by auction by the trustees on January 9th. The assets include timber limits and a sulphite mill having a rated capacity of 150 tons a day. The mill is at Chandler, Gaspé County.

ONTARIO

Dryden Receivership Lifted

Official anouncement has been made that the Dryden Paper Co. had been taken out of the hands of the receivers, under whom the company had been operated since October 1923. (The change was effective December 8th.) J. H. A. Acer has been appointed president of the company to succeed W. A. Black, who had held the office since the incorporation of the company. While the complete directorate has not been announced, it is understood that Mr. Acer will have associated with him, George H. Chahoon, Jr., president of Canada Power and Paper, and F. A. Sabbaton, who had been one of the receivers.

Since the company was placed in receivership, a little over five years ago, it has gradually developed an earning power that has wiped out all indebtedness to receivers and has in addition established a fair surplus, and present business of the company is reported as quite promising both in kraft paper and sulphate pulp.

A further announcement is expected in a short time dealing with a capital re-organization and new financing which is required to cover the cost of additional power that has been developed and for increasing the capacity. Dryden's present capital consists of 100,000 shares of no-par-value common stock and $1,100,000 of 6 per cent debenture stock. First lien notes, to an amount of $304,000, were due on October 1st of last year.

The company in recent months entered into a contract with the Bates Valve Bag Co. for a five-year period for the supply of kraft paper for the manufacture of Bates bags. This contract, it is understood, will absorb about three-quarters of the entire paper output of the mill.

Expansion of Canada Pad and Paper

Made necessary by its expanding business, the Canada Pad and Paper Co., Ltd., which for some years has operated a plant on King St., W., Toronto, has decided to build a new plant, and has purchased property on Madison Avenue, just south of Davenport Road, on which a fine new structure will be erected.

The contract has already been let on plans prepared by N. A. Armstrong and Co., architects. These call for a building of steel and concrete, 105 by 105 feet and four stories in height. The new factory will have its own C. P. R. siding. Provision is to be made for the adding of extra stories when necessary. The president and manager of the company is R. C. Hill, widely known in paper circles throughout Ontario.

Working plans have been started by a Toronto firm of architects for the Corrugated Paper Box Co., Ltd., which proposes to erect a large new plant at Leaside, a suburb of Toronto. The company has purchased five acres of land from the Canadian National Railways, on which the new factory, comprising the main unit single story, 200 by 700 feet, offices, and warehouse unit, 150 by 200 feet, will be erected.

A STORY OF DIFFERENCES

A *Different* Standard of Application Cost

THE extraordinary speed of the Vortex Painting Equipment is one of the reasons that makes the Vortex Method the best way to get your painting job done.

Brush painting is wasteful on large areas. Ordinary paint guns, designed for a multitude of uses, cannot approach the remarkable economy and unusual speed of the Vortex Equipment—a painting equipment designed only for rapid, large area work and loaned without cost.

Long Interchangeable Extension Arms reach ordinary ceiling heights without scaffolding and allow factory routine to proceed with minimum interruption.

Special Features of the Nozzle prevent clogging and minimize spray losses.

Vorcolite

A *Ready-to-Use* Gunning Paint

Vorcolite—an inside flat white—is a fine, full bodied oil paint of great light diffusing value. Giving a finished job in a single application, it provides an appreciable saving.

All Vortex Paints—for inside and out—are specially compounded for gun application over large surfaces and are as fine as any paints obtainable.

Paint with a Plan

We prepare a complete plan for the painting of your particular plant with the greatest economy. It gives complete details on organizing your crew, laying out your work, and follows the job through from start to finish.

***the* VORTEX PAINTING METHOD**

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We are considering an ☐ inside ☐ outside job to do approximately _____ sq. ft. Send your large area specialist to look it over and to tell us how to handle it from start to finish in the most practical and least costly way.

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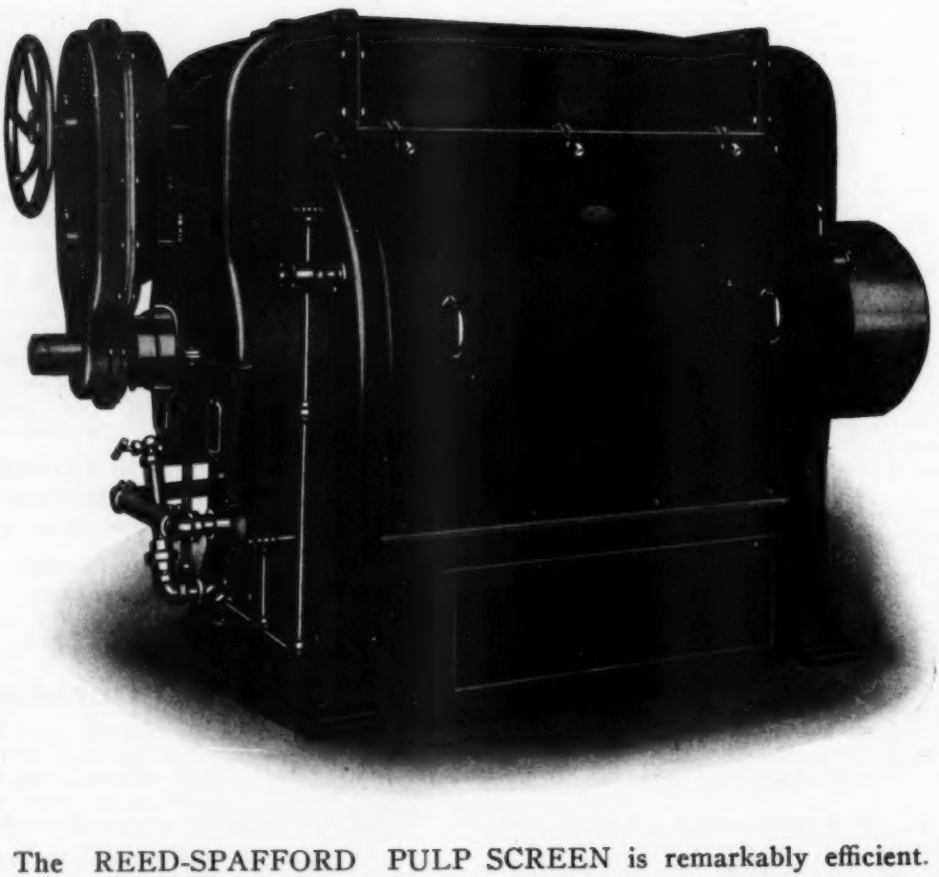
REED-SPAFFORD PULP SCREEN

(Built in two sizes)



The REED-SPAFFORD PULP SCREEN is remarkably efficient. Its capacity is large and its power consumption is surprisingly low. Let us show you what a saving this screen means to you.

Our Paper and Pulp Machinery is CONSTANTLY IMPROVED

Improved Paper Machinery Co.

Nashua, N. H., U. S. A.

SHERBROOKE MACHINERY CO., Limited

Sherbrooke, Quebec, Canada

J. S. Whealy, is president of the company, which is one of the largest manufacturers of corrugated paper boxes in the Dominion. It is proposed to go right ahead with the work so that the firm may begin manufacturing operations in the spring.

Commercial Papers, Ltd., of which G. J. Arlow and W. B. Hanna, both of Toronto, are president and vice-president, respectively, has just completed negotiations for the purchase of a block of property on King Street East, Toronto. The buildings on the site will be demolished immediately to make way for the erection of a modern factory premises with light on all four sides. This factory will manufacture safety papers exclusively. The purchasing concern is a subsidiary of Litho Print, Ltd., which recently purchased a building on Duke Street.

Thunder Bay Co. Sold to Canadian Interests

The Consolidated Water Power and Paper Co., the main office of which is at Wisconsin Rapids, Wis., has sold its Port Arthur properties to combined Canadian interests, the two principal companies of which are the Abitibi Power and Paper Co. and the Canada Power and Paper Co. The consideration involved in the transaction has not been made public.

In 1922 the American company acquired the properties of the Kaministiquia Pulp and Paper Co. at Current River, and has since been operating them as the Thunder Bay Paper Co. A new mill was opened at Port Arthur on June 4, 1927, and this has since been increased to a capacity of 250 tons of newsprint per day. Extensive timber rights were granted to the company in 1926 by the Ontario Government, and it is understood these are being taken over by the purchasers. The purchasers took possession of the properties on January 1st.

Construction has been started of a $30,000 additional story over the full top area of the new $90,000 warehouse of the Victoria Paper and Twine Co., Ltd., Wellington St., W., Toronto. As originally planned the building was to house only various departments of the company and was to have been two stories and basement, 80 by 130 feet, reinforced concrete frame and brick wall construction. The additional story has been leased to another manufacturing firm. The Victoria Paper and Twine Co. are large distributors of various paper lines.

Canadian Wirebound Buys Toronto Plant

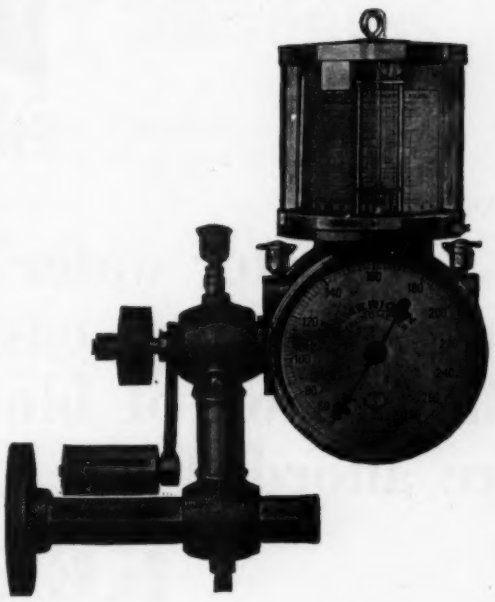
Canadian Wirebound Boxes, Ltd., has been organized in Toronto and has acquired the business of the Hamilton Wirebound Boxes, Ltd., manufacturers of wirebound boxes and corrugated paper containers. This includes the Kilgour Manufacturing Co. in Hamilton, acquired in 1920, and the Oakville Basket and Veneer Co.

This year the company began manufacturing corrugated paper containers at the Montreal plant. The company also operates a plant on Gerrard Street, Toronto. The present facilities of the Toronto plant are inadequate in view of the rapid development of the business, and it is proposed to double the capacity for wirebound containers. At the Toronto plant modern equipment for the manufacture of corrugated containers will be installed in the near future. The company owns a number of valuable patents and its customers include an increasing number of prominent users of the products it makes.

Dominion Boxboards, Ltd., of Toronto, announces that Arthur Garrison, superintendent of its board mill, has resigned to take charge of a mill at Thompson, N. Y. W. A. Crawford, formerly general superintendent of the Standard Paper Box Co.'s board mill at Kalamazoo, Mich., will in future have charge of the boxboard manufacturing end.

E. A. Wallberg, president of the Lake St. John Power and

The Log of The Paper Machine



American Paper Machine Tachometer indicates and records the speed of the paper through the paper machine. It shows all breaks, when they occurred and how long they lasted. With it, the weight of the paper is accurately determined.

For the efficient operation of a Paper Machine, an American Tachometer is a necessity.

Write for the following catalogs:

Thermometer Catalog F-41
Recording Thermometer Catalog H-41
Sulphite Gauge Catalog A-41
Recording Gauge Catalog E-41
Paper Machine Tachometer Catalog O-41
Temperature Controller Catalog R-41

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WOOL PRODUCTS

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Greater water removal over a longer period of time, easier, smoother running, elimination of blowing and better finish are afforded by

KENWOOD BOTTOM BOARD FELTS

both plain and satin weave

An important factor of their efficiency is the Kenwood Patented TANNING Process. This has proved a very great advantage, as it not only improves the Strength, Openness and Life of the felt, but it also aids in imparting a Superior Finish.

Greatly increased demand and repeat orders are indicative of the wonderfully satisfactory performance of these felts.

F. C. HUYCK & SONS

Kenwood Mills, Albany, N. Y.

Kenwood Mills Ltd., Arnprior, Ontario

Paper Co., and the company have appealed in the First Divisional Court at Toronto against the judgment of Justice McEvoy, which allowed Charles E. Campbell, newspaper publisher, of Edmonton, Alta., a commission of one per cent, or about $300,000 to $400,000, on a contract involving from $30,000,000 to $40,000,000 for the sale of newsprint by the paper company to the Newspaper and Magazine Corporation of New York. Cross-appeal was entered by Mr. Campbell, asking that a commission of three per cent be paid him as the agent, stating that he is entitled to that amount, as customary commission. The appeal was heard in Toronto last month, and judgment has been reserved.

At the factory operated at Crook's Hollow, Greensville, by the Adams Cell-board Co., of Toronto, is an old wooden water-wheel which has been in continuous use for over 115 years. Last month it went out of commission when the axle broke, and it was found that the wheel was still in good condition. It was therefore repaired and put back in its place, and is expected to give many more years of service. It is particularly interesting to note that this wheel was installed for the first paper mill in Upper Canada, as Ontario was called at that time.

According to recent advices, the plant of the Kenora Paper Mills, Ltd., is operating on short time at present, and a cut of between ten and fifteen per cent has been made in the staff, while the extent of future operations will be closely conditioned by the state of the pulp and paper markets. The operations of the Keewatin Lumber Co., another associated company of the Backus Corporation, have been cut in half during the last year.

Pulp Mills Charged with Stream Pollution

The charge that the pulp and paper mills throughout the country are completely disregarding the laws against pollution of waters was brought against them by Hon. John Hall Kelly, of Quebec, before the Empire Club, at a luncheon in Toronto last month. The speaker said that in former years the rivers and streams emptying into Lake Ontario were spawning Atlantic salmon, but that this species has now disappeared altogether, owing to the pollution of the waters and other causes. He asked whether, at the present moment, we were not the silent witnesses of similar conditions which, in a few years, might have the same effect on our inland fisheries as they had had on the salmon.

Pulp mills, he proceeded to say, constitute the greatest danger to fish life. It is the oxygen in the water that keeps fish alive, but the sulphurous acid contained in the waste which is discharged from the pulp mills robs the water of its oxygen content. A 100-ton mill, he added, does as much damage to fish life in a stream as the sewage from a whole city. He declared that the law of today was obsolete and could not be enforced, and he recommended that it be changed to permit of both industries working on a paying basis.

Tidewater Production Shifted to Toronto

The activities of the companies controlled by the Northern Paperboard Co., namely the Tidewater Paperboard Co. of Connecticut and the Canadian Paperboard Co., are now largely centered in the Toronto plant of the latter company. The Tidewater plant has been closed down, and part of its machinery disposed of, the Campbellford mill of the Canadian Paperboard Co. is idle at present, but the production is being maintained at the Frankford, Toronto and Montreal mills. The slack season and the large production of the Toronto plant are the two reasons for the temporary closing of the Campbellford mill; when the demand increases, operations will again be resumed there.

The Toronto plant, with a rated capacity of 100 tons a day, is turning out well over 60 tons of paperboard a day, and production is being stepped up as fast as the new machinery can be tuned up. The output is running well ahead of schedule. The mill is now on a revenue-producing basis, and

Felt Cleanliness

THE **Cleanliness** of your **Felts** is an important part of your paper making. Dirty felts give you trouble and greatly increase your cost by necessitating frequent shut-downs for felt changes and washing.

A **Felt Washer** which will clean the felt while it is running will greatly increase the efficiency of your plant. The Lansing Felt Washer will do that.

The **Felt** will be **kept soft.**

The **Life** of the **Felt** will be **Increased.**

The **Quality** of the **Sheet** will be **improved.**

Greater Production will result as the necessity of shutting down for felt washing will be practically eliminated.

The washing is done in nature's own way, with plain water.

Representative mills all over the country are now using this washer with satisfactory results.

May we tell you more about it?

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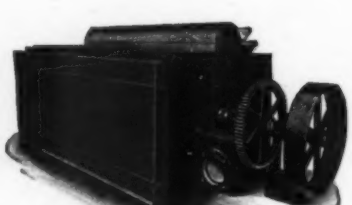


DECKERS

PULP OLD PAPERS

We offer a wide choice in vat design to suit every requirement. This machine in your pulp mill, as a multi-cylinder washer for old magazine or bleached stock, or the special design for handling mixed papers for Boxboard will meet your most exacting specifications.

Our long experience enables us to market these high grade machines at a very reasonable price.

Sizes: 30" x 48" up to 48" x 120"

Rogers and Special Wet Machines

The standard machine for producing high density sheet pulp for direct use or for Dryer. A low cost, simple, well proven means for reducing your labor, power and upkeep.

When dry stock is not desired the Single Press will handle the same high capacity with the same labor at still lower cost.

Built in units of 50 tons capacity or less

A. D. WOOD Thickener

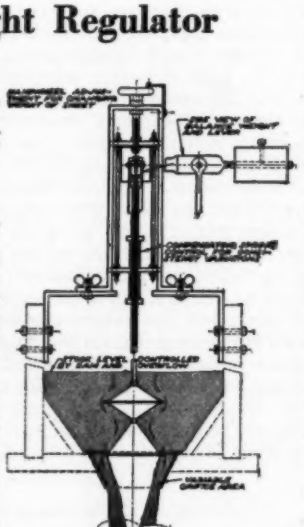
Saveall, Washer, Water Filter

The design of this popular machine is such that the cost per unit of material handled is amazingly low.

The wire does not have to drive and carry a couch roll, nor even help to discharge the thickened stock. Long life results and, with the sturdiness of the remaining parts, makes it almost automatic in operation, so seldom is any attention necessary.

Boivin Weight Regulator

Over 50% of the Boivins now operating were repeat orders.



Capable of handling any clean pulp stock in capacities above 12 tons daily, a trial of this device on our "money-back" guarantee of satisfaction will convince you that the Boivin lowers production cost and makes your customers happy. What more can you ask?

GLENS FALLS MACHINE WORKS

GLENS FALLS, NEW YORK

Waterous Ltd., Brantford, Ont. — **Manufacturing Agent**

E. K. Mansfield Co., 501 Fifth Ave., N.Y.C.
Eastern Representative

Western Representative
Woodbury & Wheeler Co., 55 Second St., Portland, Ore.

See pages 336 and 337 in the 1928 Paper and Pulp Mill Catalogue

with production at capacity, as it should be shortly, earnings from this source should be reflected to advantage in the company's report at the end of the year.

Canadian Paperboard is among the largest producers of paperboard in the Dominion and is said to supply more than 25 per cent of the country's requirements. Last year the company produced 30,770 tons, as compared with 27,856 in the previous fiscal period.

Howard Smith Running at Capacity

The plants of the Howard Smith Paper Mills, Ltd., manufacturers of fine papers, are operating at capacity, or at an annual rate of 38,500 tons. Sales, which have been at a record rate this year, have shown a slight seasonal falling off recently, although they are still well above last year. The plant of the Canadian Cellulose Co., a subsidiary, which makes bleached soda pulp, is now operating practically at full capacity, namely, 50 tons a day, the output going to the parent company's paper mill at Cornwall. Later this plant will be expanded to 75 tons daily capacity.

Changes in management have recently gone into effect. James W. Pyke and J. Alexander Cameron have resigned as vice-presidents, although they will continue as directors, and Harold Crabtree, managing director, has been elected vice-president. E. Howard Smith, Jr., formerly secretary and treasurer, has been elected managing director, and K. G. Pendock will succeed him in his former offices.

The first unit of the new boiler plant at Cornwall has been completed at a cost of $300,000.

Excavation work has commenced in preparation for the new extension that the Hinde and Dauch Paper Co. is making to its mill in Toronto, on the property that it recently purchased in contiguity to its present plant.

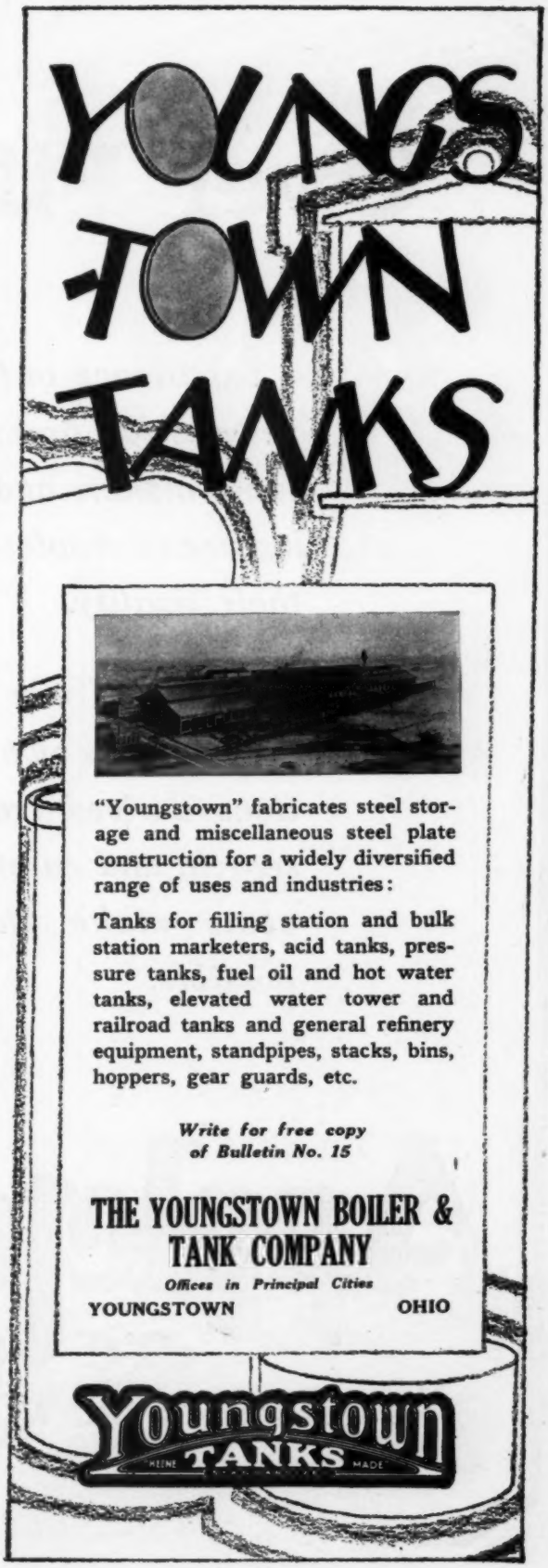
Abitibi Jottings

L. R. Wilson, vice-president and managing director of the company has announced the appointment of H. G. Schanche, former chairman of the Woodlands Section of the Canadian Pulp and Paper Ass'n., to the position of general manager of all woods departments of the company. C. B. Davis has been appointed to succeed as woods manager of the Iroquois Falls Division.

Immediately on taking up the duties of general manager of woodlands, H. G. Schanche announced the appointment of B. F. Avery to the position of chief forester of the organization. Mr. Avery has been with the Spanish River Pulp and Paper Mills for some twelve years and is one of Canada's leaders in woodlands management and forestry. He is chairman of the Woodlands Section of the Canadian Pulp and Paper Ass'n, president of the Canadian Society of Forestry Engineers, and a member of the Society of American Foresters. Mr. Avery was one of the first to appreciate and introduce the use of the airplane for forestry work, and it augurs well that men of his caliber are being given responsible positions in the management of Canada's woodlands.

The agreement of 80 per cent production in all the Ontario and Quebec paper mills, reached at the recent conferences in Montreal and Quebec, will not mean a great deal of change in the mills at Sault Ste. Marie, as the Abitibi mill there has been running at 80 per cent capacity or slightly better during the last few weeks, but it will insure a steady condition there and will prevent any danger of a shut-down or a curtailment of operations. Increased production, however, will result at Espanola, which has been running at only about 50 per cent capacity, and also at Sturgeon Falls, while the Fort William mill, which has been closed down entirely, will be re-opened.

At the regular meeting of the directors of Abitibi Power and Paper Co., which was held in Montreal last month, the regular quarterly dividend of 1-1/2 per cent on the 6 per cent cumulative preferred shares of the company was declared. In view of the unstable conditions in the newsprint industry, no dividend was declared on the no-par-value com-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TOWN
TANKS
"Youngstown" fabricates steel storage and miscellaneous steel plate construction for a widely diversified range of uses and industries:
Tanks for filling station and bulk station marketers, acid tanks, pressure tanks, fuel oil and hot water tanks, elevated water tower and railroad tanks and general refinery equipment, standpipes, stacks, bins, hoppers, gear guards, etc.
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THE YOUNGSTOWN BOILER & TANK COMPANY
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TANKS

Over Fifty Years

Experience in the manufacturing of wires for American and Foreign paper makers and the ever increasing use of Appleton Wires testify to their quality.

Looms of our own design, wire drawn in our own plant to specifications derived from exhaustive research, and carefully trained operators make this high quality possible.

Appleton Wires
are good wires
APPLETON WIRE WORKS INC., APPLETON, WIS.

mon shares of the company. George R. Gray, manager of the mills of the former Spanish River Pulp and Paper Mills, Ltd., of Sault Ste. Marie, was elected a vice-president of the company. C. C. Irvine, manager of Manitoba Paper Co., one of the wholly-owned subsidiaries of Abitibi, was elected a director and vice-president of Manitoba Paper Co.

During the final quarter of 1928, the combined newsprint production of the Abitibi mills ran about 20 per cent over that of the former quarters of the year.

A meeting of the directors of Interlake Tissue Mills was held last month, when the usual quarterly dividend was declared. S. F. Duncan was elected vice-president and treasurer, succeeding the late I. H. Weldon. T. A. Weldon and A. E. Corteneous were also appointed to fill vacancies on the directorate. The company is making a substantial addition to its plant at Merritton, consisting of a building 100 feet long by 75 feet wide, which will be a four-story building of mill construction.

Don Valley to Co-operate with Valleyfield

The Don Valley Paper Co. and the Valleyfield Coated Paper Mills have arranged to operate a joint sales office at 56 King St., West, Toronto, where the present sales office of the Don Valley Paper Co. is located. H. A. Rawsthorne, who is in charge of the present Toronto sales office of the Valleyfield Coated Paper Mills, will continue to handle the Valleyfield product exclusively, as heretofore, in Toronto, but he will also give a certain amount of attention to the business of the Don Valley Paper Co.

In 1920 a fire took place at the plant of the Don Valley Paper Co., which destroyed the machine room and another building. The machine room was rebuilt at once, but the other building was not. The company, however, has now done this work, and it is the intention to use the building in question as a store room.

NEW BRUNSWICK

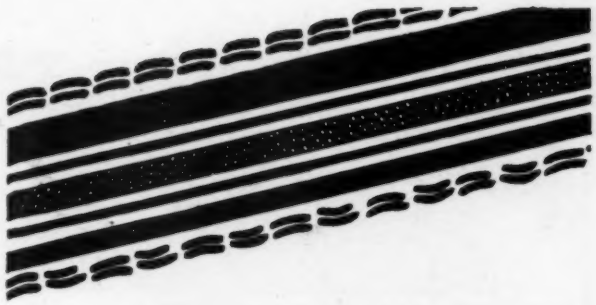
Fraser in Prosperous Condition

Despite the fact that two of the new machines of Fraser Companies have been in operation only about three months, earnings for 1928 are likely to exceed $6 a share on the approximately 370,000 shares of no-par common now outstanding. The earnings position of the company has been strengthened through consummation recently of two important contracts, one with Johns-Manville Co. and the other with Sears, Roebuck and Co. The Sears-Roebuck contract calls for supplying that company's paperboard container requirements.

The company has been operating at capacity its four high-grade sulphite paper machines and its Edmundston board machine, which started operation in June last. Two other machines have been in operation for about three months. These are the new catalogue paper machine at Madawaska, Me., and the new Madawaska board machine, one of the largest in the world. These latest plant additions have raised the company's productive capacity to approximately 500 tons a day of high grade paper and board products, and as a result there has been increased efficiency, lower operating costs and greater earning power.

Fraser, as the largest producer of spruce lumber in Eastern Canada, has made good profits this year from sale of lumber in a favorable market. Its subsidiary, the Restrigouche Co., also has had good profits from lumber sales.

Last year the company acquired a substantial interest in the Rolland Paper Co., the largest producer of fine papers operating exclusively in the Province of Quebec. The business of this company has shown improvement recently, and its acquisition by Fraser has been beneficial to the latter through enabling the two companies to co-operate in the way of sales expansion in Eastern Canada.



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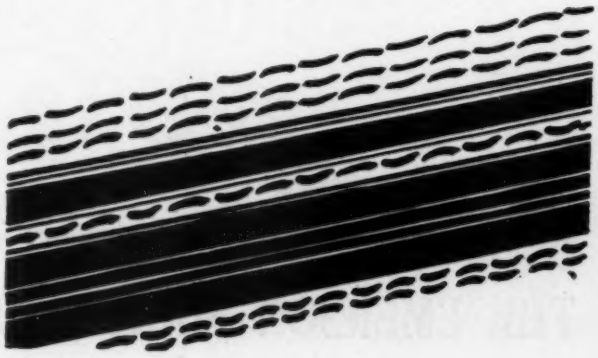
A complete line including endless felts up to 86 feet in length. Unusual ability to remove water and do it fast. Several extra days service before being discarded as proven by recent comparative mill tests.

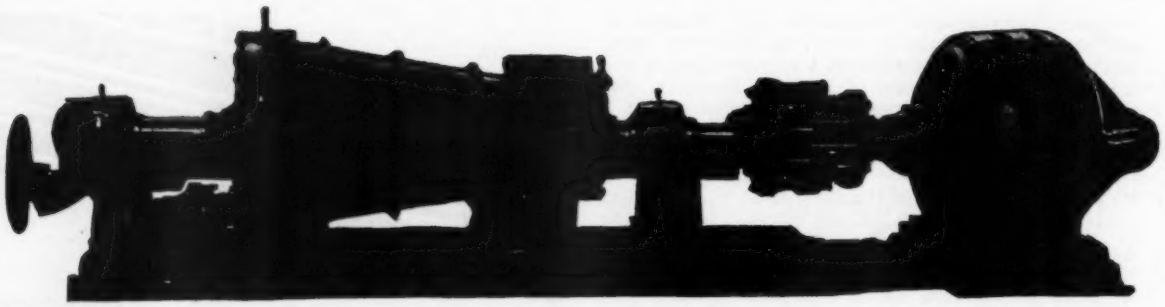
Describe your felting conditions and we will supply the felt to meet them.

Send that next order to Orr.

The ORR FELT & BLANKET CO.

Piqua, Ohio





THE No. 2 EMERSON JORDAN

is equipped with

TIMKEN ROLLER BEARINGS

A New Epoch in the paper making industry

The No. 2 Emerson Jordan, shown above, is a masterpiece of refining equipment, having Timken Roller Bearings and Bandless Plug. This sturdy, well constructed bearing application is just another characteristic of Emerson Quality and progressive engineering.

Features to Consider.

(1) Timken Roller Bearings, both radial and thrust, are mounted on taper-bored sleeves.

(2) Bearings are enclosed in sealed housings that prevent the bearing troubles generally experienced when bearings are mounted directly on the shaft.

(3) Bearings are NOT mounted directly on the shaft.

THE EMERSON MANUFACTURING CO. Lawrence, Mass.

The outlook for Fraser is even brighter for this year. Full effect of profits from new mills will be felt, and in addition the $2,500,000 bleached sulphite mill at Athol, construction of which was started recently, will probably be in operation during the latter part of the year. This mill will have a daily capacity of 150 tons and will require about 100,000 cords of pulp wood annually as raw material. It is situated about 15 miles from where International Paper is building its new $15,000,000 newsprint mill at Dalhousie. A new railway siding has been constructed to facilitate the handling of the machinery required for the construction and equipment of the mill.

In view of the profits which will accrue from Fraser's new developments, interests close to the management predict earnings of $12 a share for 1929.

Edmundston Classes Well Attended

What promises to be a very successful School of Pulp and Paper Making has been established at Edmundston, in connection with the pulp and paper mills of the Fraser Companies of Edmundston and across the International border at Madawaska, Me. This course was organized in October last in an effort to provide a complete course in pulp and paper making for those interested in that locality. This action was deemed necessary due to the deep interest shown in the vocational classes which had been carried on there in the evenings for two years.

The enrollment and interest shown have more than surpassed expectations, 35 students being enrolled and attending classes regularly. H. J. Atkinson, formerly on the chemical staff of the Bathurst Power and Paper Co., has been appointed permanent instructor; he is an honor graduate in chemistry and science of the University of New Brunswick and holds an M. S. degree from McGill. The course is based on the five volumes of the Manufacture of Pulp and Paper, together with laboratory work in physics, chemistry and pulp and paper testing, with a view to acquainting the students with the routine testing as carried on in pulp and paper mills. Classes are held morning and evening to accommodate the men working on shifts.

It is hoped that this course may develop into a provincial school of pulp and paper making.

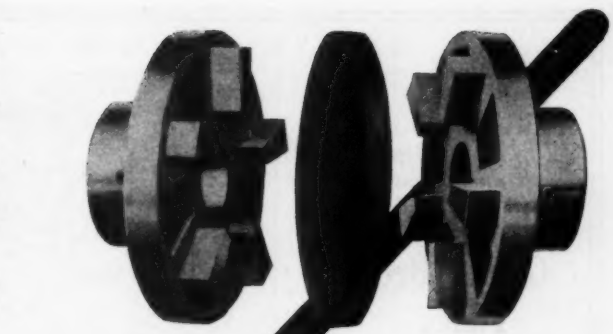
J. W. Brankley, manager of International Paper's activities in New Brunswick, was active in the acquisition by that company of 85 acres of land on the Miramichi River, at Chatham, recently. This land faces, on the highway, the International rossing mill at Morrison's Cove. Thus the company is provided with an excellent site for the new 100-ton sulphite mill which is planned for 1929 or 1930.

Sir Keith Price, chairman of Price and Pierce, Ltd., of London, England, and a member of the directorate of Price Bros., Ltd., recently completed a tour of various pulp and paper, power and timberlands properties in Quebec and New Brunswick with which he is connected. He was a guest of the Bathurst Power and Paper Co. and looked over the present plant at Bathurst as well as the prospective power and pulp and paper developments in that section.

Archibald Fraser, president and general manager of Fraser Companies, and one of the leading industrialists of the province, has been elected a director of the Royal Bank of Canada.

NOVA SCOTIA

Foster Wheeler, Ltd., of St. Catharines, Ont., where its works are located, and with its head office at Toronto, has been awarded the contract to manufacture and install three complete steam generating units for the Liverpool mill of the Mersey Paper Co. The units will consist of three 900



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DRIVE RIGHT
POWER TRANSMISSION ASSOCIATION

Absorbs Destructive Strains Like a Sponge Absorbs Water

WHEN direct connecting your motor to its load, the simple precaution of using Wood's Flexible Couplings will save you many dollars in repairs and add years of life to your equipment.

These couplings protect both ends of your equipment—the motor and the machinery it drives by absorbing the destructive vibration set up by the intermittently loaded machinery and the resulting power surges of the motor.

Note the construction of Wood's Flexible Couplings shown above, consisting of two cast iron flanges with lugs cast integral and a multi-ply specially constructed leather disc.

It is this disc that absorbs all the punishment saving your motor and machinery all wear and tear.

Only in Wood's Flexible Couplings do you get Wood's dependability.

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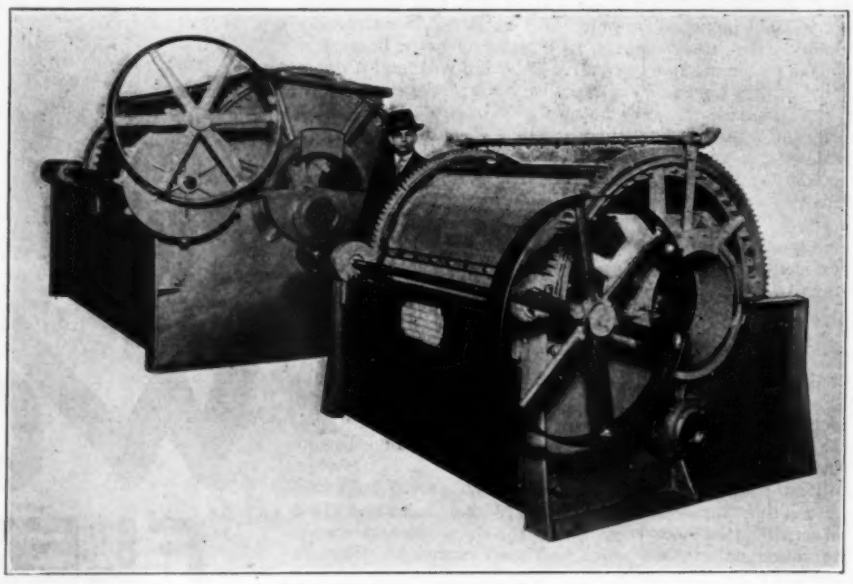

LOW INLET — CENTER INLET

GREEN BAY FOUNDRY & MACHINE WORKS
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MANUFACTURERS OF
SUPERIOR FOURDRINIER WIRES
Backing Wires
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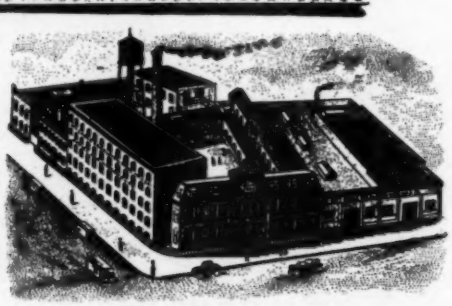

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horse-power boilers, Foster superheaters, Foster waterwall furnaces, Foster plate type sectional air-preheaters, Aero unit pulverized fuel equipment, all auxiliaries and stack.

The bid of $20,000 on the properties of the Clyde and Sissiboo Pulp Co., which sale was withdrawn by Sheriff Bishop of Digby County, is considered about as low as could be anticipated. Involved in the sale were two pulp mills, pulpwood lands, etc.

BRITISH CORRESPONDENCE

Industry Closes Satisfactory Year

Generally speaking, the British paper industry will finish the year fairly well. A better demand for paper has recently been shown in the printing and allied trades. More healthy tendencies have also been noticed in other branches of the industry, and a revival of trade is anticipated early in 1929. At various annual gatherings of the different branches, the speeches have been optimistic. An interesting statement was made by William Harrison at the dinner of the British Wood Pulp Association, to the effect that he had placed a contract with Edward Lloyd, Ltd., for newsprint amounting to £12,300,000, spread over 25 years. This is the largest paper contract ever placed in this country.

It is reported, too, that Mr. Harrison is still further extending his ramifications in the paper industry by taking over the Daily Telegraph mills at Dartford, which will add another classification to the numerous assortments of paper handled by the Harrison organizations, which it is interesting to note are adopting methods which are calculated to make paper distribution easier for the merchant.

A parallel has recently been drawn by one trade journal in this country between the Harrison amalgamations on this side, and the Hearst syndicate in the United States, for, the journal points out, that the latter has contracted with Canadian producers for long-date requirements in newsprint, though it is suggested, in this case, that the terms of the contract border on price-cutting. This development is also compared with the case of Price Brothers and Co., of Quebec, who offer publishers in the United States a cost basis scheme, involving yearly contracts with price adjustments half-yearly, bringing the value level with prevailing prices of the three largest producers.

Most of the newsprint mills are on full output but prices are extremely keen, owing, it is reported, to the low standard set by Continental mills. It is expected that the European market will be affected by developments in Canada.

In the woodpulp section, dry mechanical prices are hardening, and those of wet mechanicals are in a state of suspense pending developments. Supplies are booked well ahead. Chemical woodpulp prices are generally unchanged, but they are on a distinctly higher level than a year ago. The market prices of printing papers show a reduction compared with those of the beginning of the year. New firms in the manufacture of wrappings have produced a somewhat similar situation in that section.

A shortage of supplies is being felt in the esparto section, a situation which is caused by the fruitfulness of the olive harvest diverting native labor, despite an ample growth of esparto. No attempts having been made to gather it. Scottish paper makers have found it necessary to borrow supplies, and are also safeguarding themselves by obtaining extra lots of bleached woodpulp, which it is expected will tend still further to harden the woodpulp market.

Two papermaking concerns have installed new machines recently. The North Wales Paper Co., at Oakenwell, Flint, has put in a "108" machine, which will add 75 to 100 tons to the weekly output of this concern, while the Stoneywood Paper Works at Aberdeen brings its total of machines up to eight, which gives it the greatest output of all classes of high-grade papers, and the new machine is expected to add

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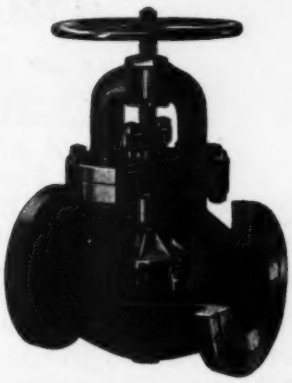

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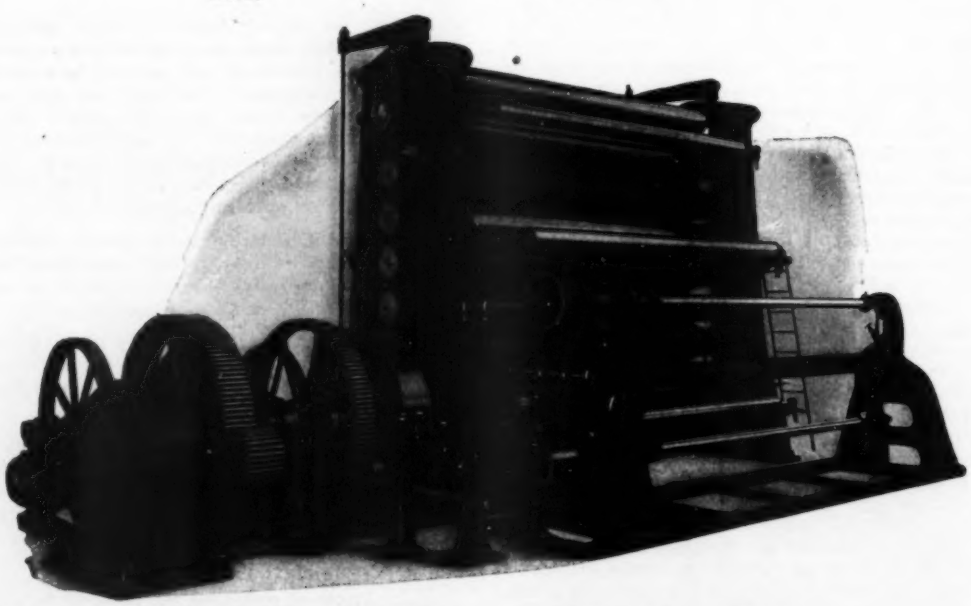
Manufacturers of Super Calenders, Platers, Cotton and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.



The HOLYOKE MACHINE COMPANY

FOUNDED 1863

3,000 to 4,000 tons to the yearly production, which is at present about 11,000 tons.

Printers Urged to Study Papermaking

Attempts are being made to educate printers on the technicalities of papermaking. Recently, the employees of Alfred Cooke, Ltd., of Leeds, listened to an address on the properties and qualities of paper, by T. H. Cunane. The London School of Printing is holding special classes under the direction of a well-known paper specialist. The Manchester College of Technology has organized courses for men who can give whole time to the study of paper.

In the past, the tendency has been to concentrate upon chemical subjects, with a result that many youths thus trained have been better fitted for the laboratory than for the papermaking or administrative side of the mill, although the knowledge of chemistry thus acquired generally enables a man to understand the reactions taking place in ordinary mill work. At present, the available knowledge of the reactions which occur in an ordinary pulp mill is comparatively small, and the study of physics is often regarded by the student as of scientific interest only, rather than of industrial importance.

It has been found that at least four years are required to enable a man to study thoroughly those subjects required in administrative positions in the paper industry, and also to provide him with sufficient technical knowledge to understand all branches of the work of a papermaker—the engineering as well as the chemical side. It is recommended that youths, after matriculating at school at the age of sixteen or seventeen shall go into a mill for twelve months, and then take a four year course at an institution.

Imports and Exports

Below are set out the values of paper trade imports and exports, together with the increases or decreases, as compared with the corresponding month of the two preceding years:

IMPORTS

	Nov., 1928.	Inc. (+) or Dec. (—) as compared with 1927.	Inc. (+) or Dec. (—) as compared with 1926.
Paper-making M'terials	1,157,251	+111,909	+160,002
Paper and Cardboard..	1,751,412	+284,241	+484,759

Quantities of the same articles imported:

	Nov., 1926.	Nov., 1927.	Nov., 1928.
Wood pulp, tons	109,572	112,037	172,599
Paper, cwt.	1,298,715	1,554,187	1,967,126

EXPORTS

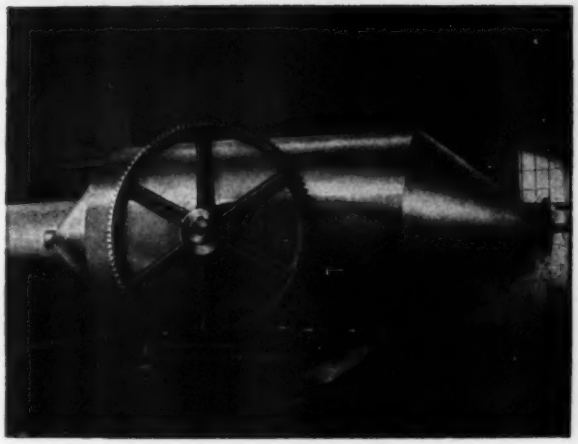
	Nov., 1928.	Inc. (+) or Dec. (—) as compared with 1927.	Inc. (+) or Dec. (—) as compared with 1926.
Paper-making Materials	117,941	—34,928	—26,493
Paper and Cardboard..	830,185	—60,499	—20,238

Quantities of the same materials exported:

	1926.	1927.	1928.
Paper-making mater'ls, tons	17,757	22,452	16,506
Paper & Cardboard cwt.	363,464	400,431	401,005

The Newsprint Service Bureau reports that so far this year Great Britain has imported from Canada 65,855 tons of newsprint, and although this is not a large amount in relation to the total consumption in this country, it is considered in the trade that it is sufficiently substantial to make the proposed increases in Canadian prices (recently decided upon by the paper trade conference in conjunction with the premiers of Ontario and Quebec) of material interest to British papermakers, for it will make it easier for them to obtain contracts on more remunerative quotations.

It is reported by the Scandinavian correspondent of The Times newspaper, that eight of the leading newspaper factories in Norway, which jointly produce about two-thirds of Norway's export surplus of newsprint, have just formed



Kellogg Digesters
in the South

THE Calcasieu-Sulphate Paper Company of Elizabeth, La., have installed two Kellogg Forge and Hammer Lap Welded Tumbling Digesters, one of which is pictured above.

These digesters were built exactly in accordance with the A. S. M. E. Code for Unfired Pressure Vessels, and are good for working pressure of 140 lbs. per sq. in. They are 10'0" I.D. x 28'6" long, and have a shell thickness of 1⅛". They are complete with drive, reduction gear, and motor.

Among other Kellogg installations in the South are the following:

Bogalusa Pulp & Paper Co. 8	Digesters
Brown Paper Mill Co. 7	"
Calcasieu-Sulphate Paper Co. 2	"
Champion Fibre Co. 5	"
E-Z Opener Bag Co. 2	"
Southern Paper Co. 8	"

All Kellogg Digesters conform to the specifications of the Unfired Pressure Vessel Section of the A. S. M. E. Boiler Construction code, and fulfill all insurance requirements.

THE M. W. KELLOGG CO., 7 DEY ST., NEW YORK

Birmingham, Alabama—827 Brown-Marx Bldg.
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POWER PLANT PIPING—FORGE WELDED PIPE—FORGE WELDED CONTAINERS—RECEIVERS SEPARATORS

ALL KELLOGG FORGE AND HAMMER WELDED PRODUCTS ARE INSURABLE

THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

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Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

PACIFIC SALES COMPANY, Security Bldg., Portland, Ore.

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. BOSTON, MASS.

a company, "Norsk Avispapir Kompagni A/s" which in future will arrange the sales of the whole production of all these factories in the various export markets. The Norwegian output of newsprint aggregates about 185,000 tons a year of which the factories in question produce about 125,000 tons.

At the annual general meeting of Wall Paper Manufacturers, Ltd., Alan V. Sugden, chairman, pointed out that the year just closed had been one of fairly normal character, but, had the general trade of the country been better, the wallpaper trade would have benefitted considerably. However, any falling off owing to bad trade conditions had been offset by the continued extension of house-building, which had been of real advantage to the company. He denied that the company had a monopoly, and thus made larger profits. On the contrary, they had competition which produced a bracing stimulus. Plans were in progress for the building of a new factory for one of the associated companies, and another property had been acquired for the housing of one of their older mills whose existing premises and site had proved inadequate.

Early Reports on Mill Operations

In an effort to place promptly before its members statistics on the paper industry, the American Paper and Pulp Association is now issuing a preliminary form of the information which is given in greater detail in its monthly statistical summary.

As the particulars given in the association's monthly statistical summary are based on the reports of identical mills comprising approximately 80 per cent of the productive capacity of the country, it is only natural that out of such a large number of reports a small percentage should be late in making their returns, and cause some delay in the publication of the final report.

The statistical department of the association is now compiling the reports received from identical mills by the 15th of the month and is publishing data on the rate of operation, together with a comparison of the rate of daily average production of the current month as compared with the previous month and also the corresponding month of the preceding year.

Since most of the reports are in by the 15th of the month, this preliminary report on the rate of operations gives the manufacturer a fairly good picture of operating conditions in the various grades of paper and pulp and enables him to make comparisons with his own operations one or two weeks before the complete statistical data are published.

Contact with Washington Bureaus

Major O. M. Porter, secretary of the American Paper and Pulp Association, has just made arrangements with Dr. Geo. K. Burgess, director of the Bureau of Standards, Washington, D. C., whereby the wealth of that bureau's personnel and accumulated research information, will be made more available to the paper industry of the United States.

At the suggestion of Doctor Burgess, Major Porter will serve as the contact man between the association's advisory committee and the Bureau of Standards, thus enabling him to reflect to the committee and through it to the paper industry, the results of the bureau's wide investigations in the character, composition and utilization of paper and its constituents. This arrangement will also make it possible for the industry to bring to the Bureau of Standards its paper problems for such investigation and assistance as its remarkable facilities will permit.

Similar arrangements are being made with other government departments, notably the Department of Commerce, the Department of Agriculture and the various forest experiment stations, as well as with the Forest Products Laboratory at Madison, Wis., in order that the tremendous crop of research information which has ripened under the direction of federal experts and federal appropriations may be harvested in the interest of the pulp and paper industry of the United States.

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Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

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STEEL

Simonds Circular Paper Stterlis

Edge-holding—that explains why mills in every section are turning to SIMONDS for the Circular Slitters that give them better work and more production. Simonds Slitters are true to form and perfect mechanically.

Order them from any Simonds factory or service station.

Simonds Saw and Steel Company

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New Orleans, La. Memphis, Tenn. Atlanta, Ga. Portland, Ore.
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Toronto, Ont. Vancouver, B. C. St. John, N. B.

The Course of Least Resistance

We are all creatures of habit, governed largely by circumstance. We like beaten paths best because we are more or less familiar with them; not because they are better. It's the course of least resistance. There are pioneers, however, who blaze the way to newer, greater and richer accomplishments. **Progress comes of their effort.**

We urge those of you who have not recently tried our Fourdrinier Wires to abandon the course of least resistance—the beaten path, and give our wires a trial. Progress will come of the effort; for our wires will clearly demonstrate their worth on your machines.

You will have no regrets if you look to us for Cylinder and Washer Wire Cloth, Dandy Rolls and Cylinder Moulds.

CHENEY BIGELOW WIRE WORKS

Springfield, Mass. *Established 1842*

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ROUND TANKS
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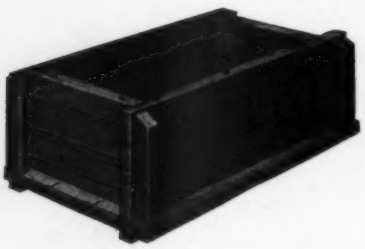

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If it is a wood tank of any shape or design we can make it for you. Our engineering department is ready to assist and advise you.

The A. T. Stearns Lumber Co.

NEPONSET, BOSTON, MASS.

EVERYTHING IN WOOD OR WOODWORK 1849

STEARNS TANKS

NEW ENGLAND NEWS

Oxford Paper Co. Recapitalized

An auspicious opening for the New Year was contained in news from Rumford Me., the home of the Oxford Paper Co., where joyful tidings to stockholders went forth in the form of an announcement of a recapitalization, involving a splitup in the common stock, and a bonus of two-thirds in new preference stock.

Common stock of the company is selling around 190. It will be changed from $100 to $25 par and each holder will be given four shares for one now held. The present $7 preferred of which 28,083 shares are outstanding will be called at $110 where it has been selling in the open market, and will be replaced by 200,000 shares of authorized preferred stock, no par, which will be issued in series from time to time, the first to consist of 89,000 shares carrying a $6 dividend and callable at $105. Of this 31,971 shall be sold in the open market to retire the Oxford present preferred and the remainder will be given to common stockholders of record December 28th, two thirds new preferred for each old common held. The present outstanding common totals 100,000 shares which will be increased to 400,000.

William A. Murray

At Livermore Falls, Me., on Thursday, December 27, William A. Murray, for many years superintendent of the three large newsprint paper mills at Livermore Falls, Chrisholm and Riley, succumbed to an attack of pneumonia after an illness of two days. He had not enjoyed good health for several years past, though seldom absent from his duties at the principal plant in Livermore Falls.

Mr. Murray was one of the most widely known superintendents in the service of the International Paper Company, as he was one of the oldest, his connection dating back upwards of forty-one years. He was originally employed at the Fort Edward, N. Y., plant of the International Paper Company and had charge of the Ticonderoga mill before going to Livermore Falls where he had been general superintendent for a period of seventeen years. His passing will be deeply regretted by his associates and all who had the privilege of his acquaintance, for he was a man of upright character and genial disposition who endeared himself to all with whom he came in contact. He is survived by a family of two sons and three daughters besides several sisters and brothers.

The International Paper Co.'s Gator Hide mulch paper is being introduced in New England in energetic fashion by the Boston merchants, Fort Hill Paper Co., and though New England is not considered a farming section, it is likely to have even greater fields of usefulness in this section than in some others for the simple reasons that its advantages include early maturity of crops a greatly desired end in itself besides a greater yield ranging from 100 per cent to over 400 per cent increase through its use also interesting to those who supply the great urban populations of this section with vegetables produced from relatively infertile soil. The Connecticut Valley is a very important onion and tobacco growing section and Maine is a leading potato producing state, all crops that have been proven to benefit tremendously by the use of mulch paper. An active sales campaign for the 1929 spring planting is underway.

Bird & Son Inc., started the manufacture of mulch paper during the past year and through its own employees conducted a series of successful tests with the stock in home gardens during the past season.

Portland Terminal Co., has entered into a contract with the S. D. Warren Co., of Cumberland Mills Me., whereby it agrees to handle all the switching of cars. The manufac-

RHOADS TANNATE WATERSHED LEATHER BELTING

ON SIX YEARS AND STILL GOOD

ON six years and "good for another year or two" is the report from a Wisconsin paper and pulp mill about a Rhoads Belt. Belts previously used on this "main drive of paper machine No. 1" lasted about two and a half years.

More than $10,000.00 worth of Tannate Belts have gone into the plants of this company during the past six years.

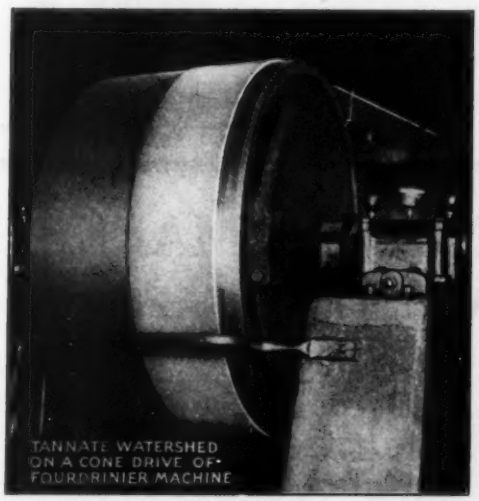
The longer life of Tannate Watershed makes it economical. Its stronger grip makes it profitable. And its dependability builds confidence with Tannate users.

Rhoads Tannate Watershed Belting is always sold under the Rhoads Service Guarantee. This leaves you to be the judge of whether your purchase is profitable. May we have your order on this basis?

J. E. RHOADS & SONS

Philadelphia - 37 N. Sixth St.

New York—104 Beekman St. Atlanta—70 Forsyth St., S. W.
Chicago—24 N. Clinton St. Cleveland—1224 W. Ninth St.
Factory and Tannery, Wilmington, Del.



Stebbins Engineering & Mfg. Co.
Chemical Pulp Mill Engineers
WATERTOWN, N. Y.

Digester, Acid Proof and other Guaranteed Linings.
Chemipulp Cooking and Recovery Process.

MERRIMAC CHEMICAL COMPANY
148 STATE ST.
BOSTON, MASS.
COMMERCIAL ALUM
CMC
IRON FREE ALUM

FINE FELTS for FINE PAPERS

Finish, Long Life and Satisfaction

The WATERBURY FELT CO.

SKANEATELES FALLS, N.Y.

TRADE MARK REGISTERED

EASTWOOD

FOURDRINIER-CYLINDER-WASHER

WIRES

EASTWOOD WIRE CORPORATION, BELLEVILLE N.J. U.S.A.

NO FELT MARKS—

With Fitchburg Felts

THE smooth, tightly-woven surface of all Fitchburg Cotton Dryer Felts insures paper free from felt marks.

¶ The finest papers—bonds, ledgers, fine writing—are made better and smoother when Fitchburg Felts are used.

¶ Manufactured in English weave, two, three, four, five and six ply, from 60 to 288 inches in width.

FITCHBURG DUCK MILLS

ESTABLISHED 1844

54 Duck Mill Road FITCHBURG, MASS.

Easy Access

—promotes frequent Cleaning of Reflectors

Clean reflectors put more light down in the working area.

Thompson Lamp-Maintenance Hangers provide **easy access** to high lamps, and avoid climbing and electrical hazards.

Inexpensive and easily installed in your present system—either indoor or out.

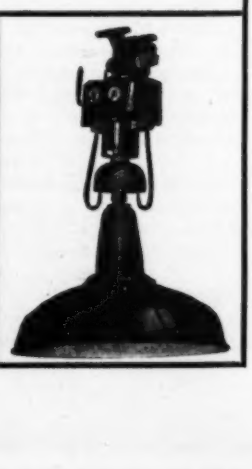
Safety and easy accessibility contribute to maximum results at lowest cost.

See also Thompson Shock Absorber or Vibration Arrester; prolongs life of costly bulbs. Get our free pamphlet on "Vibration as Related to Industrial Lighting."

Illustrated booklet B-27 and complete information on request

The Thompson Electric Company

1438 West Ninth Street
Cleveland, Ohio



turers recently built a new classification yard near their plant to facilitate the loading and unloading of cars which has speeded up their shipments and reduced demurrage. The company has done its own switching for years, but officials believed that the Terminal company could do this to better advantage. The company has operated two locomotives and two train crews in the past.

Repairs to the dam over the Kennebec River at Madison Me., which burst on December 13th have been pushed forward rapidly and the Great Northern Paper Co., mill at that point has been restored to full time operations. The dam at this point was built 35 years ago and was being raised to increase the storage of water.

In furtherance of its policy to aid New England printers, the Tileston & Hollingsworth Co., has altered its previous policy to some extent in regard to the elaborate annual calendar. This year's job was done by thirteen printers as usual, but under the direct supervision of a committee of the Boston Club of Printing House craftsmen. Their work will be subjected to a critical analysis on January 17 at the Boston Chamber of Commerce by V. Winfield Challenger, superintendent of production for N. W. Ayer, advertising agents.

A new bond paper, the very latest development in the market of rag content papers was announced on January 1st through distributors of Taylor Logan Co., Holyoke fine papermakers. The new sheet is called Art-In-Industry Bond and consists of a rag content paper into which a background of beautiful wavy lines has been built on the machine producing an effect of great beauty. The aim of the papermakers has been to furnish a sheet that would enhance the prestige of manufacturers of products who take pride in the beauty of their products. It is intended primarily for business letter paper, but is believed to have fields of usefulness in direct mail work and announcements.

Unemployment Fund Proves Successful

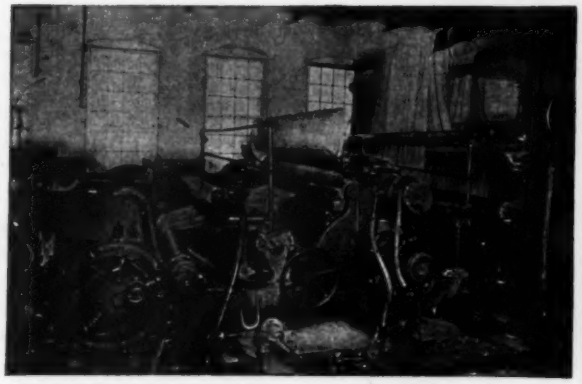
Henry S. Dennison, president of the Dennison Manufacturing Co., of Framingham Mass., one of the largest converters of paper in the country and an exponent of various forms of employee aid and profitsharing, has interested the business world in the unemployment fund which the company has successfully maintained since and during the war.

The fund received a severe test in the 1921 depression, but was not eliminated and is today over $100,000. Regular sums are set aside for it as for any other contingency. Employees of more than 6 months standing are entitled to 80 per cent of their pay as long as the fund lasts if laid off on account of business conditions. It has tended to impell the management to plan production so that employment shall be regular. At a recent hearing of the U. S. Senate on unemployment insurance, Mr. Dennison was called to give a description of the workings of the system in his plant.

Mark B. Claff, inventor of what is claimed to be the leading automatic paper box machine, died recently at his home in Randolph Mass. He is survived by four sons who will continue the business. The M. B. Claff Co. operates paper box factories at Randolph and Brockton Mass., and uses the machine invented by Mr. Claff in its operation.

Judge Brewster in the Federal District Court at Boston has dismissed the suit of W. F. Barrett against the Paper Board Industries Association in which the plaintiff alleged violation of the Sherman Law. The Association pleaded lack of jurisdiction on the part of the Massachusetts court in which it was sustained.

The Nashua Gummed & Coated Paper Co., of Nashua N. H., has voted to reduce its capitalization by $1,200. The second preferred stock is retired to this amount. The 3000



This is why so many mills wash felts the Oakite way

FIVE outstanding advantages are attained when Oakite is used for washing felts:—

1. Felts are completely cleaned, more absorbent and soft, not slippery or gummy.
2. Absolute safety to felt when Oakite is used.
3. No particles of soap or other foreign matter remain to cause spots in the paper, because Oakite contains no soap or filler.
4. Much less time is required for rinsing.
5. Life of felt is lengthened; cleaning time cut.

These outstanding benefits are a direct result of Oakite's quick, thorough and harmless cleaning action and its free-rinsing qualities. Oakite loosens every trace of dirt and sizing so that they rinse away completely. A good job is assured with little time and effort.

Keep your felt expenditures and felt washing costs at a minimum with the help of Oakite. Our comprehensive new booklet, "Oakite in Paper Mills", gives directions and formulas for many paper mill cleaning operations. Write for your copy. No obligation.

Manufactured only by

OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK, N. Y.

Oakite Service Men, cleaning specialists, are located at

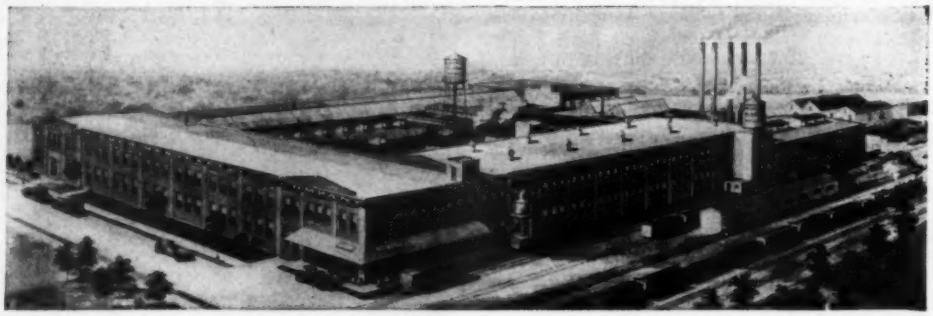
Albany, N. Y., Allentown, Pa., Altoona, Pa., *Atlanta, Baltimore, Birmingham, Ala., *Boston, Bridgeport, *Brooklyn, N. Y., Buffalo, *Camden, N. J., Canton, O., Charlotte, N. C., Chattanooga, Tenn., *Chicago, *Cincinnati, *Cleveland, *Columbus, O., *Dallas, *Davenport, *Dayton, O., Decatur, Ill., *Denver, *Des Moines, *Detroit, Erie, Pa., Fall River, Mass., Flint, Mich., Fresno, Cal., *Grand Rapids, Mich., Harrisburg, Pa., Hartford, *Houston, Tex., *Indianapolis, *Jacksonville, Fla., *Kansas City, Mo., *Los Angeles, Louisville, Ky., Madison, Wis., Memphis, Tenn., *Milwaukee, *Minneapolis, *Moline, Ill., *Montreal, Newark, N. J., Newburgh, N. Y., New Haven, *New York, *Oakland, Cal. *Omaha, Neb., Oshkosh, Wis., *Philadelphia, Phoenix, Ariz., *Pittsburgh, Pleasantville, N. Y., Portland, Me., *Portland, Ore., Poughkeepsie, N. Y., Providence, Richmond, Va., Reading, Pa., *Rochester, N. Y., Rockford, Ill., *Rock Island, Sacramento, Cal., *San Francisco, *Seattle, *St. Louis, *St. Paul, South Bend, Ind., Springfield, Mass., Syracuse, N. Y., *Toledo, *Toronto, Trenton, *Tulsa, Okla., Utica, N. Y., *Vancouver, B. C., Waterbury, Conn., Wichita, Kan., Williamsport, Pa., Worcester, Mass.

*Stocks of Oakite materials are carried in these cities.

OAKITE

TRADE MARK REG. U.S. PAT. OFF.

Industrial Cleaning Materials and Methods



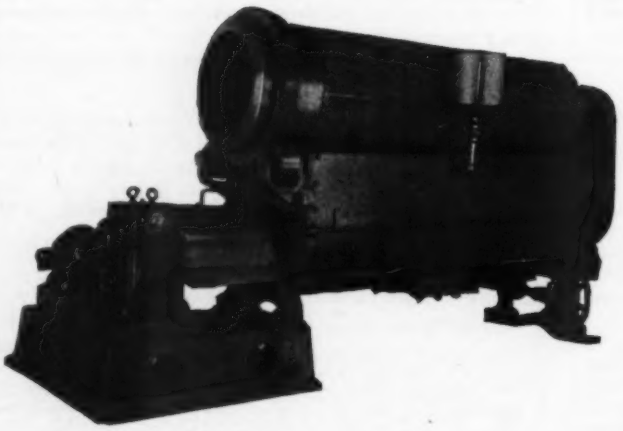
Special Roll Covering Service

You'll find the answer to your roll covering problems in Cincinnati Service. Here your roll will be covered wth uniformly tough rubber and in record time. Let us demonstrate the service that has been pleasing paper makers for nearly a quarter of a century. Send your next roll to Cincinnati.

The Cincinnati Rubber Mfg. Co.

Cincinnati, Ohio

WORM GEAR SPEED REDUCERS



In any ratios **Standard ratios in stock**

The users of this mixer have been so well pleased with the performance of their Horsburgh & Scott Worm Gear Speed Reducer drive that it is now specified as standard in their entire plant. This preference is not the result of high pressure merchandising methods but is due to one quiet efficient salesman—their original Horsburgh & Scott Worm Gear Speed Reducer. It is gratifying to know that "performance counts."

We also manufacture a complete line of Heli-Spur and Herringbone Speed Reducers. May we have your inquiries?

The Horsburgh & Scott Co.

5114 Hamilton Ave. *"Gear Makers Since '89"* **Cleveland, U. S. A.**

Gears for Every Industrial Purpose—Worm—Bevel—Herringbone—Spur—Spiral—Hardened Heat Treated Gears —Non-Metallic Gears and Pinions

shares of Class A common were increased to 45,000 shares of common without par. The 2000 shares of Class B common was changed to 6000 shares no par common. The amendment does not capitalize any present or future surplus.

The Corrugated Paper Mills Inc., of Natick Mass., has changed the name of its company to Industrial Management Inc., by segregating the 365 shares of the common stock which represents the machinery, patents etc. The new company will act as consultants, financiers and advisers of business enterprises.

The St. Croix Paper Co., despite the poor condition in the newsprint industry during the past year, has made a most successful record during 1928 which was made quite obvious when the company recently declared a dividend of $1.75 regular and $1 extra to stockholders of record December 10.

John Lewis Perkins

The death of John Lewis Perkins occurred December 27th at Holyoke, Mass., following an illness of but three days. He was chairman of the Board of the American Tissue Mills and B. F. Perkins Sons Inc., was 54 years of age.

Mr. Perkins was born in Holyoke and had lived there his entire life. He first became connected with the paper industry through the Perkins company, manufacturers of paper mill equipment. The Perkins company grew rapidly when it entered the tissue paper business in 1889 when it was consolidated into the present American Tissue Mills. The Perkins family is estimated to own $5,000,000 stock in these companies.

The Maine Central R. R. will proceed with its proposal to increase the woodpulp rates from its lines westward to 90 per cent of sixth and will endeavor to secure adherence of the Grand R. R. and the Boston & Maine R. R. to similar advances on pulp from points on their lines to mills on the Maine Central. It is predicted that the New England Paper & Pulp Traffic Association aided by the Brown Co., will take the case to the I. C. C. Heavy shipments from Berlin N. H. to other New England mills will be directly affected and will mean very heavy increased freight outlays for several large New England book paper mills. Pleas that raw materials should not be advanced when the class rate revision promised drastic changes in the finished paper rate structure unfavorable to New England shippers, had little effect on the carriers.

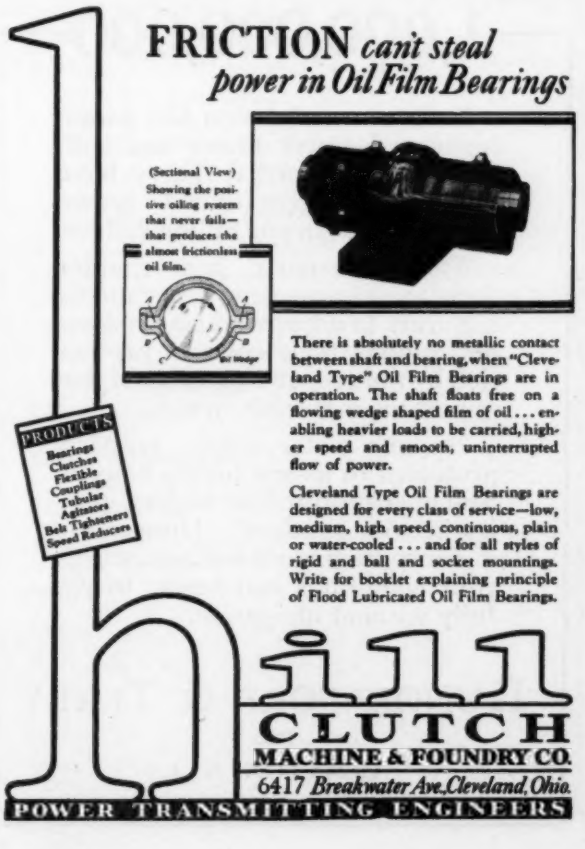
The American Writing Paper Co., denies the recent rumor that the Platner and Porter Division of the Company at Unionville was to be transferred to Holyoke and also denies similar removal rumors concerning the Windsor Locks Division. The divisions of tests however are to be moved to the Wauregan Division at Holyoke.

N. Gleason Torrey, retired purchasing agent of Hollingsworth & Whitney Co., died recently in his 73rd year. He was active with the Maine manufacturers during the period of their great expansion. The widow and a son survive.

One of the largest manufacturers of corrugated paper in New England, Warner & Childs, Company Inc., of Medford, near Boston, Mass., has merged with the Robert Gair Co., effective at once. The Gair company by this action absorbs one of the country's pioneer manufacturers of corrugated board and completes its countrywide chain. R. M. Taylor will continue in the management of this unit and will assume more extended activities under the merger. The personnel of the Medford organization will be kept intact.

Arthur F. Moul has been elected secretary and director of Samuel C. Rogers & Company, Buffalo, N. Y., makers of machine knife and saw grinders. Mr. Moul joined the Rogers organization in 1924 and has been manager for the past three years.

ALLIGATOR
TRADE MARK REG. U.S. PAT. OFFICE
STEEL BELT LACING
The famous name in belt lacing
For nearly twenty years, the name Alligator Steel Belt Lacing has meant —extreme strength; serviceability; easy, rapid application. It has meant a simple, smooth, separable joint; protection of belt ends in a clinched grip of steel; uniformity of steel used and of finished product. Every point desirable. Genuine Alligator Steel Belt Lacing has them all.
JUST A HAMMER TO APPLY IT
Made in eleven sizes. Sold throughout the world
Made only in America. Sole Manufacturers
FLEXIBLE STEEL LACING CO.
4675 Lexington St., Chicago
In England at 135 Finsbury Pavement, London, E. C. 2
Look for the name Alligator Steel Belt Lacing on the box cover, and the familiar Alligator stamped on the lacing


FRICTION can't steal power in Oil Film Bearings
(Sectional View) Showing the positive oiling system that never fails—that produces the almost frictionless oil film.
There is absolutely no metallic contact between shaft and bearing, when "Cleveland Type" Oil Film Bearings are in operation. The shaft floats free on a flowing wedge shaped film of oil . . . enabling heavier loads to be carried, higher speed and smooth, uninterrupted flow of power.
Cleveland Type Oil Film Bearings are designed for every class of service—low, medium, high speed, continuous, plain or water-cooled . . . and for all styles of rigid and ball and socket mountings. Write for booklet explaining principle of Flood Lubricated Oil Film Bearings.
PRODUCTS
Bearings
Clutches
Flexible Couplings
Tubular Agitators
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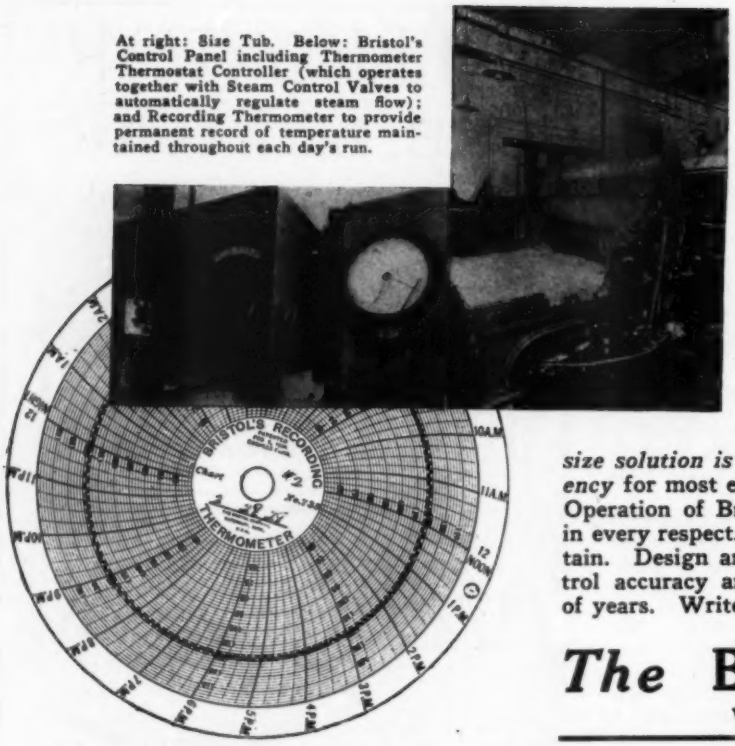
Speed Reducers
hill CLUTCH
MACHINE & FOUNDRY CO.
6417 Breakwater Ave. Cleveland, Ohio.
POWER TRANSMITTING ENGINEERS



At right: Size Tub. Below: Bristol's Control Panel including Thermometer Thermostat Controller (which operates together with Steam Control Valves to automatically regulate steam flow); and Recording Thermometer to provide permanent record of temperature maintained throughout each day's run.

Above chart illustrates very close control secured with Bristol's Equipment.

. . . and for *Controlling Size Tub Temperature*

By automatically regulating steam flow, Bristol's Control Equipment assures maintenance of a constantly uniform temperature in the Size Tub. Thus *the size solution is constantly held at just the right consistency* for most efficient sizing of paper stock run through. Operation of Bristol's Control Units is entirely automatic in every respect. Equipment is simple to install and maintain. Design and construction are such as to assure control accuracy and trouble-free service even over a term of years. Write for complete information. No obligation.

The Bristol Company

Waterbury, Connecticut

Boston · New York · Birmingham · St. Louis · Pittsburgh · Philadelphia · San Francisco · Chicago · Denver · Akron · Detroit

1,000,000,000

In 38 years of design and manufacture of water filters and softeners, Hungerford & Terry have installed an aggregate daily capacity of more than one billion gallons.

This experience has enabled them to aid paper and other manufacturers to improve their products and reduce their costs of production by the proper treatment of that important material—water.

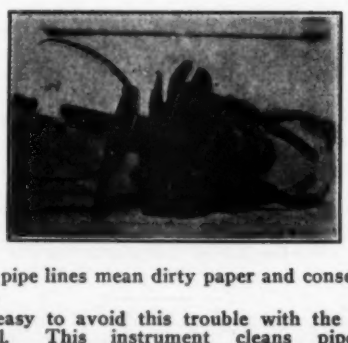
Is your water supply properly protected to insure highly efficient mill operation and the highest quality in your product? Hungerford & Terry Engineers will investigate your conditions and report to you fully without obligation.

HUNGERFORD & TERRY

INC.

CLAYTON, N. J.

Clean Pipe Lines All of the Time



Slimy pipe lines mean dirty paper and consequently —waste.

It is easy to avoid this trouble with the Hayton Go-Devil. This instrument cleans pipe lines mechanically with no trouble and in a short time. Just insert the Go-Devil in the pipe, turn on the fresh water and out the other end comes all of the slime.

The propeller-like blades of the Go-Devil revolve against the pipe walls scraping off the fungus, leaving a clean line. By means of a strong flexible spring the bends are negotiated with ease.

We will gladly furnish any further information you may desire

HAYTON PUMP AND BLOWER CO.

Appleton, Wisconsin

OHIO NEWS

Rotarians Visit Sorg Mills

The Sorg-Oglesby-Smith Paper Company, Middletown, was cited as an example of a model paper plant to the members of the Middletown Rotary Club when they were recently invited to inspect the plant by D. D. Thirkield, personnel director of the company.

The new electric power plant, the last word in modern, centralized power equipment, gave the visitors an example of the most advanced methods in power control. This plant generates power for the company's three large mills.

The Sorg mill, which was the first unit of the present large plant, has the distinction of being the outgrowth of the first Manila paper mill west of the Alleghenies. It was established in 1866 with a daily output of 800 pounds. The combined mills now have a production of 200,000 pounds, illustrating not only the growth of the business, but the tremendous increase in the consumption of paper during the past sixty-two years.

A new paper machine is being built by the Black Clawson Company of Middletown for the Wardlow-Thomas Paper Co., Middletown. This is but one step in a program of expansion and development begun last year, and the program will be carried on with the ultimate object of making each unit of the plant entirely modern.

A building adjoining the offices of the Raymond Bag Company, Middletown, was recently acquired by that company to take care of the increased business in its executive department. The cost and bookkeeping divisions, also the art department which is a new feature, have been installed in the new quarters.

Appointments at Beckett Paper Co.

W. Vernon Williams has been elected president of the Beckett Paper Company of Hamilton, Ohio, to fill the vacancy caused by the recent death of Minor M. Beckett. Mr. Williams has been head of the sales department for several years and closely associated with the business.

Don W. Fitton of Hamilton, was chosen a member of the board of directors.

Guy Beckett, who has recently resided in Fort Wayne, Ind., will return to Hamilton to become assistant sales manager of the company. Mr. Beckett has had a wide experience in the paper business.

In a recent anniversary edition of the Hamilton Daily News, the Beckett Paper Company was designated not only as one of Hamilton's most distinctive industrial enterprises, but one of the pioneer industries in the country. The company has just closed its eighty-first year. Since its organization it has remained on one site, in the control of one family and has had but three presidents.

Minor M. Beckett

Immediately following the publication last month of a serious accident to Minor M. Beckett, president of the Beckett Paper Company, Hamilton, Ohio, came the news of his death, December 4, 1928.

Mr. Beckett was born in Hamilton, December 9, 1896. He was a graduate of Massachusetts Institute of Technology, and served with the chemical research corps during the World War. Following the war, he was employed in the chemical department of the Hamilton mill until the death of his father four years ago, at which time he succeeded to the presidency of the company.

The widow and a year old daughter survive.

A year ago, the Ohio State Legislature passed a bill providing for the abandonment on January 1, 1929, of the Miami & Erie canal. The Harding-Jones Paper Company of Excello, whose power is generated by the canal, has filed an

What is BLACK AND WHITE?

It is an exceedingly high grade *free* subscription magazine. But it is NOT sent out indiscriminately.

Its purpose is to disseminate knowledge of a technical nature couched in language that any reader can understand.

It boosts no individual. There are no "strings tied to it." It deals in cold facts. There are three distinct and separate editions—Textile, Metal and General editions.

The following representative list of subjects was taken from the "Table of Contents," of some of the editions:

The Old Army Game. Ring Oiling Bearings. Waste. Our Future Weights and Measures. Belting a Vital Factor in Modern Industry. Reducing Power Costs. Economy in Lubrication. The Trend of American Industry. Plain Bearings vs Ball and Roller Bearings.

If you would like to be placed on the subscription list, write on your letterhead stating your firm's business, the position you occupy, and your request will be given every consideration. Or, use the coupon below.

IMPORTANT—Write plainly, or print, and consider whether you want to receive BLACK and WHITE at the mill or at your home address.

E. F. Houghton & Co.
P. O. Box 6913
North Philadelphia, Pa.

At no cost to me whatsoever please enter my subscription to the new Houghton publication, BLACK and WHITE.

Name .....
Position .....
P. O. Address .....
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PI-B&W-69

PAPERMILL MACHINERY FOR SALE

72" Trim Complete Board Machine, 6 cylinder—6 presses, 61 dryers 36" diam.; drives, pumps, variable speed engine, blower, etc.
Good Parts of 80" Trim Paper Machine—except Wet End and presses—14 dryers 48" diam., calenders, reel, Moore & White slitter and winder.
Beloit Triplex Pump 11" x 10".
Gould Triplex Pump 8" x 12".
Noble & Wood, Emerson, and Horne Jordans, of various capacity.
Two 60" Hamblet sheeters with Moore & White Layboys, six roll back stands.
Seybold Paper Cutters—65" and 74".
Cameron Langston and Kidder slitters—different widths.

Send us your inquiries.

GIBBS-BROWER COMPANY, Inc.
Paper and Pulp Mill Brokers
261 Broadway, New York City
Telephone—Barclay 8020
OUR MOTTO—"Service First"

BETTER SERVICE
on

Hard maple and gum wood press rolls
Brass tube rolls
Bronze couch and breast rolls
Brass, Iron and Wood felt rolls
Copper covered felt rolls
Brass covered felt rolls
White wood felt rolls
Iron cores for rubber covered press and felt rolls
Bronze suction box covers
Hercules car movers

All rolls balanced

We would be very glad to submit information and quotations on all products. Just drop us a card.

J. W. Hewitt Machine Company
Paper Mill Machinery
Neenah Wisconsin

Paper Mill Machinery

1—Rice Barton & Fales Fourdrinier with two presses 24 dryers 48x94", two calenders
1—Fourdrinier with two presses, 19 dryers, 36x84"
1— 84" Clark Cutter with Moore & White Layboy
2— 90" Holyoke Super Calenders motor drive
1— 72" Holyoke Super Calender motor drive
3— 66" Holyoke Super Calenders belt drive
1—154" Warren two drum winder with slitter
1—149" Beloit two drum winder with slitter
1—130" Moore & White four drum winder with slitter
1—129" Pusey & Jones two drum winder with slitter
1—127" Warren two drum winder with slitter
1—112" Moore & White four drum winder with slitter
1— 84" Beloit two drum winder with slitter
1— 60" Kidder two drum winder with slitter
1— 77", 60", 52" Hamblet Sheet Cutters.
1— 70", 56", 54" Moore & White Sheet Cutters
1— 14x16" Ball Twin Variable Speed Engine

FRANK H. DAVIS COMPANY
175 Richdale Ave. CAMBRIDGE, MASS.

Wanted—at once an A1 experienced back tender for board mill, with excellent opportunity for advancement. Mill located in Northern Wisconsin. Address Box 146, The Paper Industry.

SALES ENGINEER—To handle paper machinery specialties such as Winders, Screens, Pumps, Friction Clutches, Finishing Room Machinery. State age and past experience. New England territory and Mid West. Address Box 147, The Paper Industry.

USED JORDANS—7-Large Jordans, some belt drive and some direct connected to motors, including motors and starters, all in good condition and at extremely low prices. If interested, write us quickly, describing your requirements. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

FOR SALE—One slightly used Noble & Wood Mammoth Jordan together with 500 HP motor and coupling. It is also equipped with pulley for belt drive, if preferred. Price and particulars upon request. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

POWER PLANT PIPING

We are fully equipped to supply fabricated materials and to install complete piping systems for Electric Power Stations, Blast Furnaces, Steel Mills, Coke Works, Paper Mills and Industrial Plants of every description—backed by an experience of almost a quarter century.

Pittsburgh Piping & Equipment Co.
PITTSBURGH, PA.

STEEL PLATE CONSTRUCTION
Riveted and Welded
Specialists in PAPER DIGESTERS and Heavy Plate Work
RITER-CONLEY COMPANY
Pittsburgh, Pa.

THE JOHNSON FRICTION CLUTCH
For Slitting Machinery
Write for Catalog, P. I.
THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

injunction against this measure on the grounds that its lease on that portion of the canal which serves the mill has not expired.

Container Plant to Operate Soon

The new plant of the Gardner & Harvey Container Co., Middletown, is almost completed and it is expected will be put into operation within the next month. This plant is equipped for the manufacture of corrugated paper and its products, and when running at capacity will employ 200 people.

C. J. Page of Atlanta, Ga., has been appointed general manager of the company and has already taken up his duties in Middletown. Mr. Page comes from the Atlanta Container Co., a division of the O. B. Andrews Paper Company, and is well qualified by experience and ability for the position to which he has been appointed.

December Meeting Miami Supts.

The Miami Valley Division of The American Pulp and Paper Mill Supt. Association held December 29 meeting at the Hotel Anthony Wayne in Hamilton, Ohio.

Dr. C. A. Brautlecht in charge of the Chemical Department of the University of Maine spoke on the subject, "Technical Education in the Pulp and Paper Industry," in which he explained the necessity of technically trained men working with the practical "old heads" to keep up with modern progress and the present competition.

He mentioned a number of paper mill men who are graduates of the University and who are all making good as executives. He also told of the policies of the University and their future plans.

The Cheney Bigelow Wire Works had an interesting exhibit of their wire products. The old style hand shuttle, the new power shuttle, dies for drawing wire to size and various other equipment was also exhibited. They screened two reels of motion pictures showing their plant in operation in all the departments and showed the complete process from beginning to end in making fourdrinier wires.

Resolution—A resolution was accepted as follows: Resolved that whereas: in the passing of Minor M. Beckett, President of The Beckett Paper Company, our Industry has suffered a distinct loss and

Whereas: Our association has been the recipient of many valuable and helpful services in our work, and

Whereas: We are mindful of his many talks and other favors extended: therefore be it

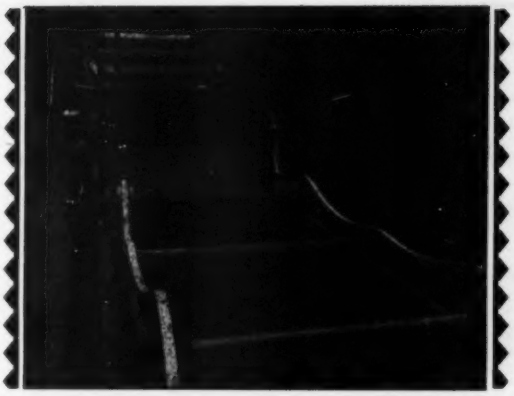
Resolved: That the Miami Valley Division of The American Pulp and Paper Mill Superintendents Association extend to his widow and family our heartfelt sympathy and to The Beckett Paper Company in their loss our realization of the blow they have suffered in the removal of their leader.

Be it further Resolved: That we in this meeting deem it proper to ask the secretary to send a copy of these resolutions to Mrs. Beckett and family and to the Beckett Paper Company and that the same be included in the minutes of this meeting and spread upon the books of the Miami Valley Superintendents Association.

The Miami Valley Paper Mill Supt. Assn.
M. L. Barker, Secy.
W. W. Galloway, Chairman.

The next meeting will be held in Dayton on Saturday, January 26.

As a result of the merger of American Schaeffer & Budenberg Corp. with Consolidated Ashcroft Hancock Co., Inc., it has seemed advisable to establish one central sales office. All correspondence, inquiries and orders from American Schaeffer & Budenberg Division should hereafter be directed to Consolidated Ashcroft Hancock Co., Inc., 100 East 42nd Street, New York City. All American Schaeffer & Budenberg instruments are made as before, by the same men and in the same factory in Brooklyn, but no mail should be addressed to the factory.



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Every extra hour that you keep the machine going increases the return from this huge investment and means a larger profit for you.

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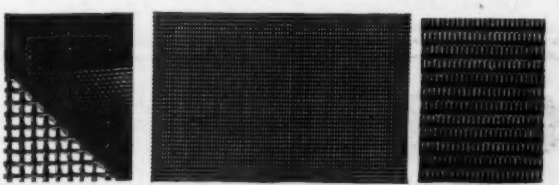

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Research Produces New Check Paper

Following the example set by the United States Government in developing a special paper for use solely in the printing of bank notes, The Todd Company, of Rochester, N. Y., in co-operation with one of the country's largest paper manufacturers, has developed an entirely new type of paper to be used exclusively in the printing of checks.

Announcement of the successful production of the new paper was made at the annual convention of the Bankers Supply Division of The Todd Company, held in Chicago and Rochester, November 13 to 16 inclusive. The process of manufacture, however, remains a closely guarded secret, the formulae involved being known in their entirety to only one man.

A prominent part in the development of the paper was played by Burgess Smith who as Inspector of Technical Work for the United States Bureau of Engraving & Printing was one of the Government's leading experts on anti-counterfeiting measures. Mr. Smith is now director of the research activities conducted by The Todd Company in providing business and the general public with effective safeguards against the depredations of the check criminal.

With a view to obtaining a report from a disinterested source, the paper was submitted to an independent testing laboratory for tests of its folding, tearing and bursting strength. The report shows that the resistance to cracking after repeated folding is 428 per cent above the average of five of the best grades of paper commonly used for checks. The tearing strength exceeds the average by 23 per cent. The bursting strength after folding is 25 per cent above the average.

The paper was also subjected to the effects of acid fumes, intense light, varying temperatures and varying degrees of humidity. Mr. Smith states that its life is practically indefinite, and that if subjected to further laboratory tests at the end of a seven-year period it would show no appreciable deterioration. The ordinary sulphite paper will show definite deterioration at the end of a year.

The long life of the paper and its resistance to wear and tear either by folding or handling—both fundamental requirements which must be met by any thoroughly satisfactory check paper—are explained by Mr. Smith as being due to the unusually long fiber and to the fact that only about one fourth of the sizing ordinarily used is employed. Generally speaking, the strength of paper is in direct proportion to the length of the fiber, and in inverse proportion to the amount of sizing.

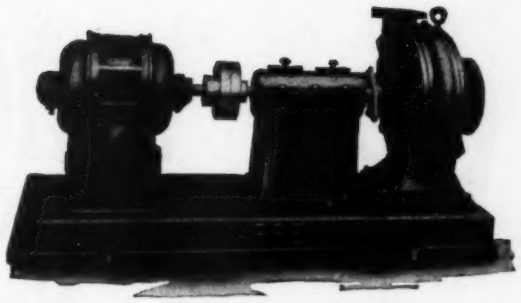
One of the secrets of the manufacturing process is the means by which a good writing surface is secured with so little sizing. Writing ink sinks into the paper without spreading laterally. The green ink widely used by banks has given manufacturers of check papers much concern because of its tendency to spread on the best papers. The new paper takes this ink as well as any other.

A third important requirement is met by the new paper in that its use lessens the chance of loss due to alteration after the check leaves the drawer's hands. The long fiber makes erasure difficult and the accomplishment of the erasure even more difficult to hide. In tinting the paper, a sensitive dye and distinctive design are employed as further assurances against erasure.

Back of the successful production of the paper, according to Mr. Smith, lie four years of research and experimental work, and the expenditure of nearly two million dollars.

The Hill Clutch Machine & Foundry Company of Cleveland, Ohio, have made the following appointments in connection with their dealer sales organization: Lombard Iron Works, Augusta, Ga.; Murray Co., Dallas, Texas, and adjacent territory; D. de Treville, Savannah, Ga.; J. G. Iler, Charlotte, N. C.; Cameron & Barkley, Charleston, S. D.; Wm. G. Moorman, Buffalo, N. Y.

The Morris Machine Works, Baldwinsville, N. Y., builders of Morris centrifugal pumps, announce the removal of their Detroit office to 730 Fisher Building.



Warren Stuff Pumps move heavy stock quickly

In an eastern paper mill, a Warren Stuff Pump fills a 1400 pound beater with 5% stock in one minute and twenty seconds.

Built to handle 6% clean stock efficiently and without clogging, Warren Stuff Pumps move pulped stocks quickly and smoothly, do not require attention and stay on the job 24 hours a day.

They have easily renewable case liners which make it possible to maintain a close running clearance between the impeller and sides, insuring sustained high efficiency during the long life of the pump. The large single pedestal supports both plain and thrust bearings, assuring perfect alignment and the shaft is extra large at impeller and bearings to prevent vibration and deflection.

If you are looking for stock handling equipment which will give steady, dependable operation under the hardest kind of service, it will pay you to investigate Warren Stuff Pumps. May we send you Bulletins, layouts or estimates?

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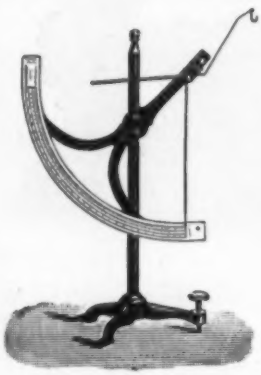
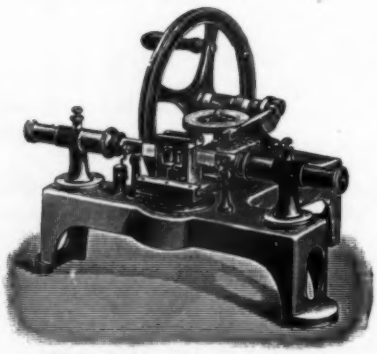


All Kinds of Scales

Patented
Schopper-Riegler Beating Tester
Uniformity of beating means better paper.

The Schopper Standard Desk Micrometer
Carried in stock—1/1000 of an inch for Boards, 1/2000 of an inch for Paper.



Schopper Folding Tester
The folding test has become standard for bonds, ledgers, and Kraft papers.

Schopper Strength and Stretch Tester

Small Piece Pocket Paper Scale
By weighing a piece 2 in. by 4 in., gives basis weight 25x38, 24x36, 22x34, 500 sheets.

Rapid Strength and Stretch Tester

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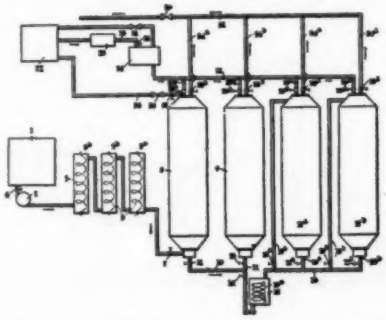
Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Pulp Digestion Process

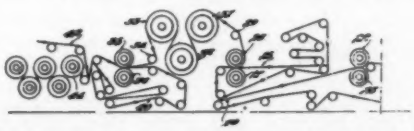
WOOD pulp is manufactured by injecting a preheated liquor into wood chips, which are contained in a digester, against a substantially constant pressure. This pressure



is derived from an external gas. The liquor is circulated in the digester and the pressure that is required for this circulation is also derived from this external gas. C. B. Thorne, Hawkesbury, Ontario, Canada. United States Patent No. 1,691,682, filed April 5, 1926.

Paper Making Machine

THIS machine consists of the usual web-forming device and means for mechanically extracting moisture from this formed web including two sets of presser rolls which are spaced apart, each set being provided with a felt running between the co-operating presser rolls. The web is made to



pass between the first set of presser rolls while supported upon the felt. The web is then led around a number of heating drums in passing from one set of presser rolls to the other, so as to cause simultaneous engagement of opposite sides of the web with a heating drum. Means are provided for conducting the web thereafter through the second set of presser rolls while operatively supported upon the felt. J. C. Corcoran, Worcester, Mass., assignor, Argy Preheating Corp., Niagara Falls, N. Y. United States Patent No. 1,690,402, filed Oct. 14, 1927.

Effect of Temperature on Sulphite Digestion

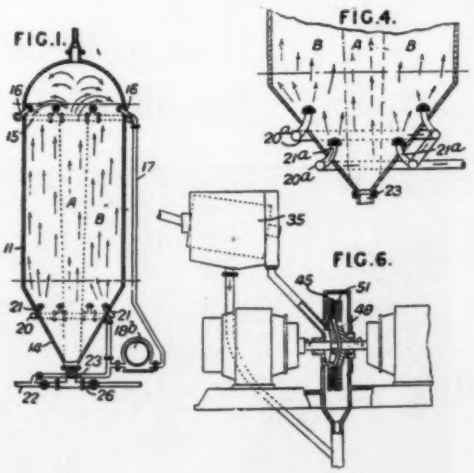
UNDER the assumption that all other conditions are maintained constant during the investigation of the digestion process and that sufficient circulation of the liquor takes place, it is possible to obtain both at a temperature of 120 degrees C. as well as at the maximum temperature of 135 degrees C. a maximum yield of pulp amounting to approximately 55 per cent of the weight of the wood and containing seven to eight per cent of lignin. At the last named temperature, the decomposition is so rapid at the end of the digestion operation, that it is extraordinarily difficult to attain the aforementioned yield. At a temperature of 120 degrees C., this stage of the decomposition is more easily attained. Therein lies the advantage of the lower decomposition temperature.

The slowness of the decomposition affords a better equilibrium between the "used" and "unused" digestion liquor. It was found that in the stage of digestion which corresponds to bromine coefficients 0.15 to 0.30, that is 52 to 48 per cent cellulose yield, the course of the digestion at a maximum temperature of 120 or 135 degrees C. plays no figure, for in both instances yield and bromine coefficient of the material obtained are the same. The material that is obtained at a temperature of 120 and 135 degrees C. gave papers, after being beaten to the same degree of beating, with practically the same strength characteristics.

The conditions are different in the rapid digestion process. The quality of the pulp is worse and the yield at the same degree of decomposition is approximately three per cent less. The rapidity of the decomposition of the wood is about doubled due to the increase of ten degrees in the temperature. The acidity of the liquor as well as the formation of sugar and sulphuric acid in the waste liquor were studied. The temperature has but little effect on these factors. E. Haegglund, Papp. och traevaru-tidskr. foer Finland, year 1928, number 12, pages 451 ff.

Making Pulp

IN A process for making paper pulp by digesting wood with liquor, and steam, and wherein hot liquor from the top of the digester is injected into the bottom, the steam is injected axially while the liquor is injected in one or more annular zones, between the central axis and the periphery of



the digester. The digester (11), see figure 1, is provided with header pipes (15) and (20), having inwardly projecting pipes (16) and (21) and connected by the pipe (17) through the pump (18b). The pipe (20) is situated adjacent the conical base (14) at about half radius. Steam is admitted through

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operate without air pumps

The water jets produce the vacuum by condensing the steam and maintain the vacuum by entraining the air and gases

30 standard sizes—Vapor inlets 12" to 66"

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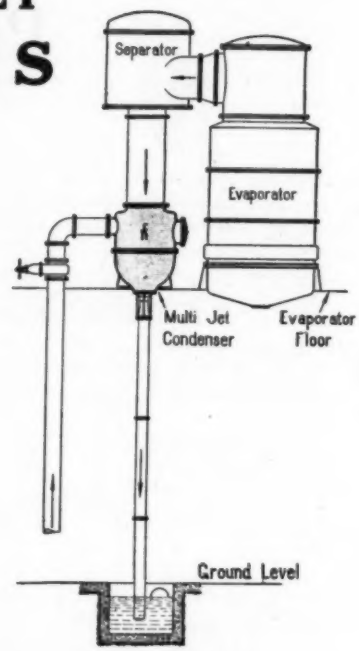

Specify Barometrics for black liquor evaporators

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Paper Mills Need Plenty of Water— and Need It Cheap

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You either obtain the amount of water agreed upon, or it does not cost you a cent.

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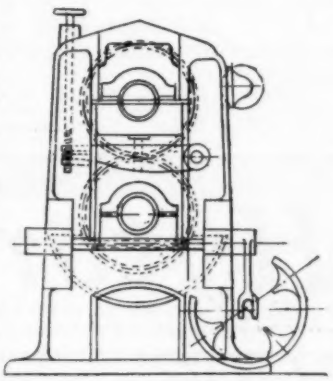
Memphis, Tennessee

pipes (22) and (23), the latter of which with pipe (26) serves as a discharge.

In a modification, two rows of pipes (20a), see figure 4, are provided with staggered outlets (21a). The steam admitted at (23) heats the core (A), while hot liquor is withdrawn at (16) and injected at (21) to heat the annular zone (B). The charge of pulp is undercooked to retain a portion of the lignins, pentosans and sugars, the fibers being then passed through a screen (35), the fibers which will not pass there through being reduced between discs (45) and (49) having rubbing rims (51). (See figure 6). R. W. Hovey, St. John, New Brunswick, Canada. British Patent No. 295,759, filed May 23, 1927.

Coating Paper with Resins and the Like

FRENCH Patent No. 608,793 is concerned with a process for coating or impregnating paper with synthetic resins and the like without using alcohol or any other solvent to form a solution of the resin. The products that are obtained in this manner can be used in making electric insulators and the like. The impregnating agent is used in the form of a viscous liquid in the cold. This liquid product is an intermediary stage in the manufacture of synthetic resins. Its density is 1.2 at 20 degrees C. and it contains about twelve per cent of water and ten per cent of phenol.



The machine which is used to apply this resin to the surface of the paper is shown in the accompanying illustration. Means are provided for attaining the desired thickness of the resinous coating on the paper. The machine is also provided with guide devices for running a continuous sheet of paper through it and the squeeze rollers are made so that the pressure exerted between them on the paper can be controlled. This in turn controls the thickness of the resinous film on the surface of the paper. Fibre et Mica, France.

Filling Pulp Digesters

THE object of Czecho-Slovakian Patent No. 25,334 is to remove the air from the digester through openings in the bottom of the apparatus. A screen is accordingly arranged in front of the discharge opening in the bottom of the digester. This screen has the purpose of preventing the passage of wood particles, but it allows the air to escape. The screen may be arranged so that it can be easily removed or it can be suitably fastened so that it remains fixed. It is advantageous to make the screen of a substance which can be digested along with the stock and hence converted into pulp. S. Svensson, Krohom, Sweden.

Measuring the Sizing Quality of Paper

THERE are almost forty methods which can be used in measuring the sizing quality of paper and hence it is natural to ask which of these should be used to give the most accurate results in the easiest manner. All these methods are divided into four different classes, as follows: methods in which ink is used, methods in which solutions are used which react with one another, methods in which the principle of electrolytic conductivity is used, and finally methods in which water is used. The numerous processes are discussed briefly under these headings.

The meaning of sizing quality is indicated and a distinction is made between surface sizing quality and internal sizing quality. The various methods are criticized and the results obtained with them on one and the same kind of paper are compared. It is concluded that the drying-indicator method of the Bureau of Standards gives the best results as far as internal sizing quality is concerned. The agreement between the curling method and the drying indicator method is with few exceptions good. The Stoeckigt method gives uniform results, but the effectiveness of the method is marred in that it has an error which increases as the sizing quality is enhanced. This error is due to the phenomenon of selective adsorption. The electrolytic method is in general too irregular and faulty to be used for the measurement of sizing quality of paper. B. Schapiro, Der Papierfabrikant, 1928, pages 609-17.

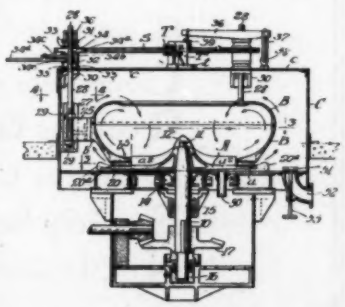
Chemical Processes During Sulphite Digestion

A SERIES of thorough experiments were carried out on the chemical mechanism of the sulphite digestion of wood. Even though the dissolving action is slight, nevertheless, the sulphite liquor begins to dissolve away the incrustations on the wood at the very start of the digestion process. The action of the liquor is stronger between the temperatures of 80 and 100 degrees C., but it reaches a point where it remains constant. There it remains until the end of the digestion when the activity of the sulphite liquor is again decreased. Carbohydrates and lignins form the main constitutents of the incrustations on the wood. At the outset the removal of these substances takes place simultaneously with an equal degree of intensity. The removal of the carbohydrates is finished when approximately twenty-three per cent of the weight of the wood has gone into solution. The removal of the lignin from the wood, however, continues further.

At the beginning, the pentosans are more strongly dissolved out and then the hexosans. The final solution ratio between the pentosans and the hexosans is, however, one to two. It is possible to conclude from these observations that a definite molecular relationship exists between cellulose, lignins and carbohydrates. The resins and fats are subjected to lesser action during the digestion process. The removal of these substances from wood must be assigned rather to mechanical agencies active during digestion than to chemical action. O. Routala and J. Sevon, Annales academiae scientiarum, fennicae, series A, volume 26, number 4, pages 1 to 28.

Pulp Beater

THE machine, which is of peculiar construction is shown in the accompanying illustration. It consist of a tank (C) and a bowl (B) within the tank. This bowl has an opening in the bottom and a number of spaced and downwardly projecting knives are arranged around this opening. A plate is located beneath and closes the bottom opening of the bowl and this is also provided with beater knives arranged opposite the knives of the bowl. These sets of knives cooperate with one another and provide an entrance between them for stock to be beaten. The illustration shows at the bottom how the knives are rotated. C. R. Seaborne, Appleton, Wis. United States Catent No. 1,691,308.

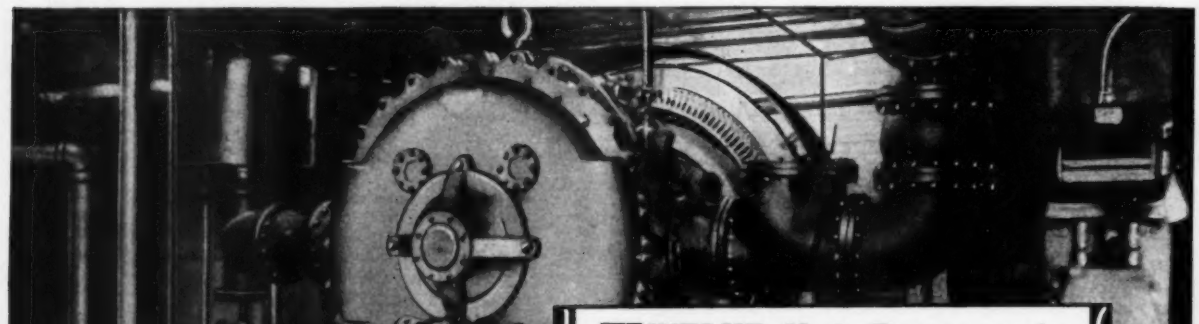


Steamed Straw

THE process is carried out in a horizontal digester. The steaming is carried out at a pressure of five to 5.25 atmospheres over a period of two to four hours with constant removal of the water of condensation. The process is very simple for the straw can be directly treated without the need of preliminary preparation. About 120 to 140 kilograms of straw can be treated per cubic meter of digester volume.

The straw treated in this manner is completely dis-

at the ANGLO-CANADIAN PULP & PAPER CO.



TWELVE Nash Pumps are installed in the Anglo-Canadian Pulp & Paper Co., Limoilou, Que.,—eight Nash Hytors in vacuum service and four Jennings Flat Box Units for removing water and air from flat boxes.

NASH ENGINEERING COMPANY
161 Wilson Road South Norwalk, Conn.

Nash Hytor
VACUUM PUMPS AND COMPRESSORS

THE "TRIMBEY-SHEVLIN"
A NEW PULP

S creens 80 to 100 Tons Ground Wood per Day.
C onsistency—Screened Stock 0.8% to 1% Air-Dry.
R equires Only 25 to 30 Horse Power.
E mploys Only One-Half Usual Number Of Deckers.
E ntirely Self-Cleaning.
N o Showers, No Thinning Water; No Wash Water.

A Pulp Screen Which Is A Worthy Companion To The Trimbey Automatic Consistency Regulator and The Trimbey and Tibbitts Proportioning and Metering System.

ASK US

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MADE IN CANADA? YES.

integrated and can be readily rubbed to a powder under pressure. After-treatment of twenty to thirty minutes in a kollergang yields a product which can be beaten in a beater into a pulp. Tests have also shown that it is possible to do away with the kollergang and to beat the steamed straw directly in beaters. The color of the steamed straw is a warm, dark brown, which is somewhat deeper than the paper made from sulphate pulp. Both the stock and the paper made from it has an odor of steamed wood but when the stock or paper is stored for a long time, this odor disappears. On the other hand, the odor can be made to disappear quickly by the addition of 1.5 per cent sodium hydroxide solution or 38 degrees Be. or from one to two per cent of chalk in the beater.

The original contains figures on the strength characteristics of papers made from steamed straw puly. It is indicated that the laboratory results obtained with straw paper are directly contradictory to the general opinion in the paper industry regarding the value of such papers. The reason for this is that the laboratory tests were carried out with great care and a proper made paper was obtained. These same results can be secured on a practical scale when the papermaker learns how properly to make straw paper.

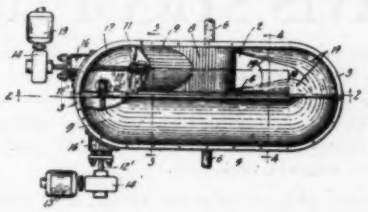
The yield of straw pulp from raw straw is in the ratio of one pound of the straw pulp from one and one half pounds of the raw straw. Hence, the yield is less by this process than by the lime process, which gives one pound of the pulp from 1.4 pounds of the raw material. The author discusses the possible uses of steamed straw and the advantages of the steaming process over those methods usually employed in the manufacture of straw stock. The new method is patented in German Patent No. 413,582. Janata Wochenblatt fuer Papierfabrikation, 1928, pages 978 to 981.

Determining the PH Value of Paper

THE significance of hydrogenion concentration in determining the acidity or alkalinity is discussed and general methods of determining pH values are described. The pH value of paper may be found either colorimetrically by the use of indicator papers, graded with respect to their pH range, or of the Wulff colorimeter, or electrolytically by means of the measurement of the electromotive force, using a quinhydrone electrode. For samples other than raw or parchment papers the colorimeter method is recommended, using an aqueous extract of the paper, while for the exceptions named either the electrolytic or the indicator paper method may be used on the paper itself, without extraction. Parchment papers have pH 3 to 4.5, while other papers have pH 4.5 to 9 according to the conditions of manufacture. Reasonable agreement is shown between results obtained by the different methods used. B. Schuelze, Der Papierfabrikant, 1928, volume 26, 625.

Pulp Beater

THE beater, which is patented by G. S. Witham, Hudson Falls, N. Y. in United Patent No. 1,692,602, is featured by possessing an enclosed horizontal stock passage from the



rear of the beater roll around to a point near the front of the roll. Means are provided within this passage for forcing the stock through it.

Use of Circulating Pumps in the Pulp and Paper Mill

BEFORE a selection is made of the type of pump to use, that is, a centrifugal or piston type, a number of questions must be answered. These are: the volume of water to be delivered in cubic feet per minute, the character of the water, that is, whether clean, sandy or muddy; whether the water contains gas, whether it is salty or sour, its temperature, the delivery head in feet, the length of the vertical suction pipe from the lowest level of water to the center of the pump. It should be mentioned that the manometric suction head decreases with increase in the water temperature. The following table is interesting:

0 degrees C. theoretical	10.00 meters,	practical 7.5 meters
45 degrees C. theoretical	9.00 meters,	practical 6.0 meters
60 degrees C. theoretical	8.00 meters,	practical 4.50 meters

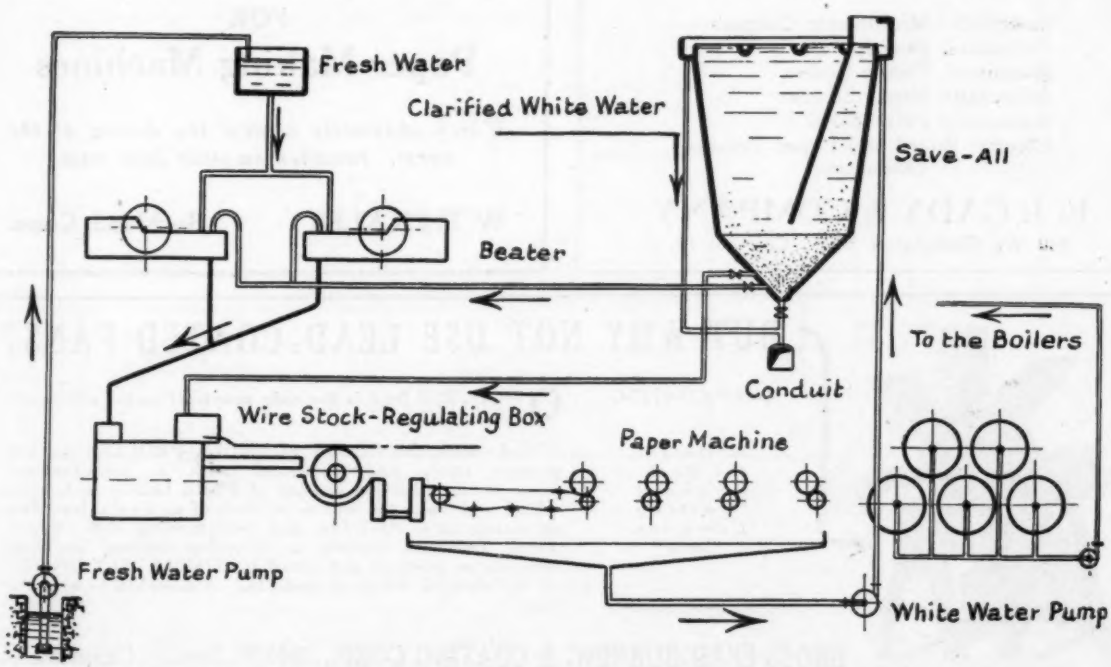
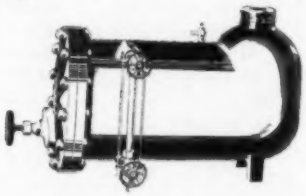


Fig. 1. Centrifugal Pump Installation with White Water Recovery (Mueller System)

For greater capacity



—DAVIS STEAM TRAPS

Duplex valves governing continuous flow give the Davis Steam Trap unusually large capacity. It is used for draining dry kiln coils, steam and oil separators, cooking kettles, indirect heating coils and wherever there is a big volume of condensate subject to great variation.

Two cone shaped balanced valves, float operated, frictionless in operation, automatically regulate the flow. A constant minimum water level seals the valve openings—steam can never escape. You may use this trap under any pressure—the valve area is always right. Details upon request.

Booth No. 82, Chicago Power Show, February 12-16, 1929

G. M. DAVIS REGULATOR CO.
414 MILWAUKEE AVE. CHICAGO, ILL.

Balanced Valve Pressure Regulator Float Valve Back Pressure Valve
Stop and Check Valve Exhaust Relief Valve Non-return Valve
Butterfly Valve Float Box with Control Valve

DAVIS AUTOMATIC VALVE SPECIALTIES

Pll—Gray

Again in 1929

The same dependable line of Powell Valves with the same Powell quality and guarantee.

Fig. 102
Bronze "White Star" Globe Valve

DOUBTLESS there is no feature in Powell Valves that has not been claimed by all others. And yet, there is only one Powell in the world of valves.

THE WM. POWELL CO.
2525 Spring Grove Ave.
CINCINNATI, OHIO

POWELL VALVES

Instruments for Calipering, Weighing and Testing Paper and Box Board:

Automatic Micrometer Calipers
Automatic Board Scales
Automatic Tissue Scales
Automatic Paper Scales
Automatic Felt Scales
Electric Board and Paper Testers (Automatic)

E. J. CADY & COMPANY
549 W. Washington Blvd., Chicago, Ill.

Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES **Buckland, Conn.**

BUT WHY NOT USE LEAD-COATED FANS?

LEAD-COATING

Write for the Booklet about "Cutting Corrosion Costs"

LEAD-BURNING

OF COURSE lead is the only practical metal which will resist SO2.

And—with the GROSS FORMULA PROCESS we can protect steel, and cast-steel with a homogeneous, permanently adhering coating of PURE LEAD—a coating which will make the unit as acid-proof as a solid lead fan, as strong as a steel fan, and withstanding high temperature, pressure, suction or vibration without buckling, warping or peeling; and which is COMPLETELY UNITED to the surface which it protects. Applicable to any size job.

GROSS LEAD-BURNING & COATING CORP., 3953 W. 25th St., Cleveland, O.

70 degrees C. theoretical 7.00 meters, practical 2,00 meters
78 degrees C. theoretical 5,50 meters, practical 0.00 meters

It is also necessary to know how many feet the suction head varies, whether or not the water runs under pressure into the pump (height of drop), the variation of the delivery head, the choice of drive, etc. The article also contains interesting data and information on the reasons why various difficulties arise in the operation of pumps and the methods that may be used in order to correct the faults. (Figs. 1 & 2) F. Streitel, Wochenblatt fuer Papoerfabrikation, 1928, pages 801-7.

Sizing Paper

THE sizing of paper is carried out with simultaneous heating of the material between heated rolls. These rolls may be connected at the dry end of the paper machine or may be erected separately. They are maintained at a temperature of 100 to 175 degrees C. The result is that the rosin and resinous products, which is contained in the paper, are melted, the sizing of the paper is thus enhanced and the size is well distributed throughout the paper. L. F. Dober, French Patent No. 569,363.

Paper of Uniform Thickness

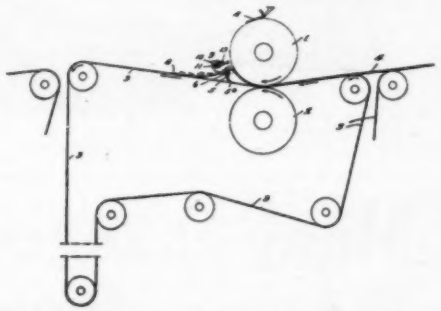
AUSTRIAN Patent No. 110,727, taken out by the "Carinthia" Pappenfabrik Gustav Hornberg & Co., is concerned with a process for measuring the thickness of the paper web so as to obtain paper of even thickness from the paper machine. This micrometric measuring device is applied to the wet paper web as it leaves the cylinder wire, and consequently at that point where the rolls press the water out of the paper web and hence where swelling of the paper is impossible due to the strong pressure that may be applied to it.

Behavior of Lignin and Chlorolignin in Making Pulp by the Chlorine Method

CHLOROLIGNINS which are produced in the chlorination processes from woody or other fibers have a mean chlorine content of thirty per cent if extracted by organic solvent. In water-extracted chlorolignins the average value is eighteen to nineteen per cent, but further extraction of these with organic solvens yields the higher chlorigated product. The most successful extraction of chlorolignin occurs when the preliminary cooking of the fiber with soda is abandoned. Chlorolignin so obtained decomposes slowly if moist and more rapidly by heating, yielding hydrochorie acid. In a sealed tube two thirds of its chlorine is recovered as hydrochloric acid. The amount of soda necessary to dissolve chlorolignin in the cold is less than the chlorine equivalent, but at a temperatue of 95 to 100 degrees C., more soda is required. Lime precipitates chlorolignin from soda solution. Hence, the disadvantages attaching to the use of lime and bleaching powder in processes for cellu lose production arise. The lime-chlorolignin precipitate is easily hydrolyzed, and a large excess of lime is required for complete precipitation. The molecular weight of chlorolignin in acetone is about 1000. P. Waentig, Zeitschrift fuer angewandte Chemie, 1928, volume 41, pages 1001-5.

Papermaking Machine

UNITED States Patent No. 1,687,847, taken out by R. E. Read, White Plains, N. Y., and assigned to International Paper Co., is concerned with certain improvements in the



paper making machine. The machine contains a rotary roll, shown at (1) and a traveling member (3), which is in position to receive the paper web from this roll. A cutting device is provided which operates to sever a lead strip on the roll. This device is shown at (13). A fluid blast device is associated with the cutting device and is in position to blow on the severed end of the strip and operates so as to carry it towards the traveling member.

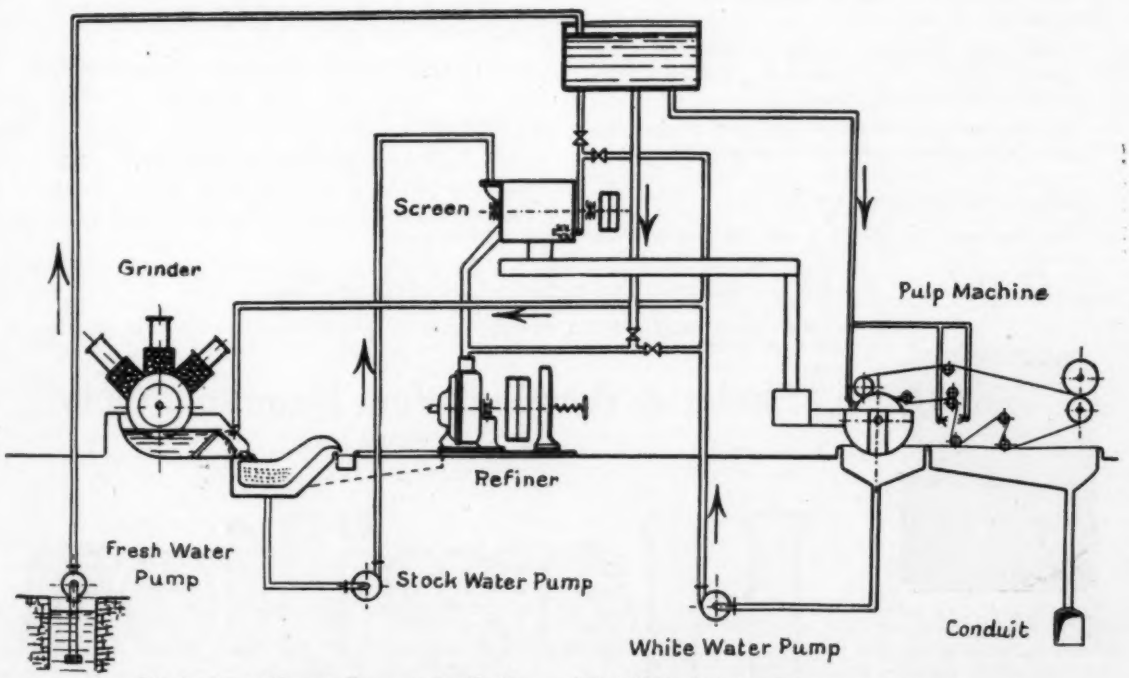


Fig.2. Centrifugal Pump Installation with White Water Recovery (Grinders)

This tissue copy book is from the early records of Shuler and Benninghofen. It takes care of the correspondence between 1868 and 1878, the reconstruction years of the Civil War. To go through it is to realize how tight money sometimes was. Specific mention was made that bills were to be paid in currency.

Many changes have been made in those 71 years

THERE were no typewriters back in 1858 when Asa Shuler and J. W. Benninghofen formed a partnership in Hamilton, Ohio to manufacture paper-making felts.

Letters were written in long hand. If a "carbon" was wanted it had to be made in a letter press and tissue copy book like the above.

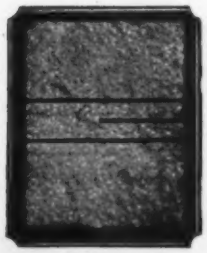
Those were the days when painstaking care characterized every business effort,—manufacturing as well as office.

The descendants of those two men, their sons and grandsons, are still making felts, immeasurably better felts than those woven back in the fifties and sixties.

For in back of them is all the experience gained in those 71 years, three generations of felt making. It is this experience that dictates the entire process of making these felts which combine strength with greater water removing qualities; that save in steam and production costs; that wear longer and produce better paper with less down time for washing; that make money for the wise manufacturer who uses them.

But the test of a Hamilton Felt is in your mill on your machines. For purposes of comparison take your hardest one—put on it a Hamilton Felt and give it the most grueling test of use and performance you think a felt ought to have. Don't spare it. You'll come back and want these better felts on all your equipment.

Ask the Hamilton Felt man, who is a practical paper maker as well as a felt expert the next time he calls on you. Tell him your problem. He'll have a felt for you that will meet it exactly. Most likely he calls on you regularly, or you can write to us direct.



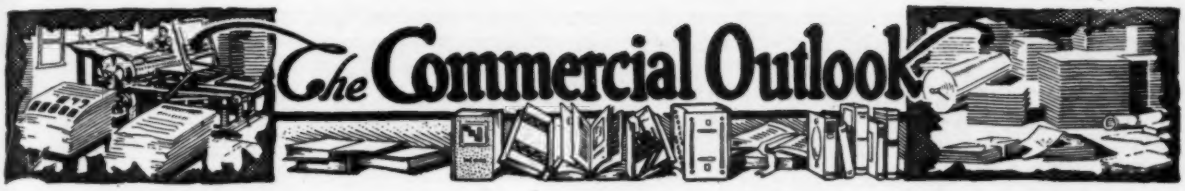
Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

Shuler & Benninghofen, Hamilton, Ohio

The Miami Woolen Mills

ESTABLISHED 1858

Hamilton Felts



New York, January 1, 1929

A NEW year has started, and what are the prospects for business in paper? Most favorable, it might be answered, and in offering this reply, it can be said that a great majority within the industry agree on the point. The paper trade today is optimistic—in several directions. Not only is it believed that a period of excellent business is due during the next few months or at least during the first half of 1929, but it is also felt that conditions within the paper industry are righting themselves to a degree where a more satisfactory market situation will be experienced than has been the case in the last couple of years, if not longer.

In plain words, paper manufacturers and paper jobbers and other distributors are looking forward confidently to realizing a better margin of profit on their product and in their operations. There is an old saying that "Experience is the best teacher," and this can be applied to the paper industry and those within it very aptly at present. For several years there has been a keen tussle between manufacturers and distributors of paper to secure every whit of possible business —on the theory that production and operation had to be on a big scale in order to eke out a reasonable amount of profit. Therefore, no effort has been spared or no stone left unturned by papermakers in their drive to grab the last pinch of business which could be secured, and, in many instances, irrespective of the prices concerned. It is no secret that many manufacturers are beginning to change their viewpoint, having found through experience that they may be doing a whale of a business but making no profit. Thus, more attention is being given to the matter of profit, and less to the corralling of business. And there are signs that an era of more prosperous business is on tap for the paper industry. That it needs it, after the lean recent years—insofar as profits go—goes without saying.

Demand for the various grades of paper developed actively prior to the holiday and inventory season at the end of the old year. There was a brisk movement of practically all classes of paper—newsprint consumption in the big cities touched a new high level, wrapping and tissue papers were bought and used in large volume, the demand for fine paper and specialties was excellent, and book paper moved in good tonnage. Since then the market has quieted, as it usually does in the closing days of the year. Yet there is a steady demand of no mean proportions emanating from consuming and converting quarters, and reports state that most paper mills have kept fairly well occupied over the seasonally dull period, and, moreover, that most of them are well supplied with orders which should warrant fairly active operations for some while to come. What is most wanted and most needed now is a broader margin of profit, for both manufacturers and distributors of paper, and it is on no idle hearsay that the assertion is made that there is every reason to believe that the next few months will witness a distinct change in this phase of the market structure, because "experience is a teacher" and papermakers and dealers have had much experience along this line in recent years.

The production of paper in the United States scored a big increase in October as compared with the preceding month, reaching a total of 617,944 net tons of all grades in October, against 546,946 tons produced in September, according to the monthly statistical summary of the American Paper and Pulp Association. During October mills shipped out a total of 620,365 tons of paper, which was in excess of their production for the month, and contrasted with 561,634 tons shipped in September, with the result that mill stocks dropped from 279,525 tons of all grades at the end of September to 272,006 tons at the end of October. The report shows that the total production of paper and board in this country during the first ten months of 1928 amounted to 5,814,148 tons, recording an appreciable gain over the 5,667,074 tons manufactured in the corresponding period of 1927, or an increase of approximately 3 per cent.

Production of newsprint paper in November reached a total of 123,785 net tons in the United States, while shipments from mills were 122,880 tons, and in Canada 223,645 tons were produced and 233,280 tons shipped, showing a fair increase over the production of 121,613 tons in the U. S. and 216,602 tons in Canada in the preceding month, according to the monthly summary of the News Print Service Bureau. During November, 20,169 tons of newsprint were made in Newfoundland and 1,719 tons in Mexico, so that the total North American output in that month was 369,318 tons, against 360,744 tons in October. The Canadian mills produced 272,985 tons more in the first eleven months of 1928 than in 1927, which was an increase of 14 per cent, and the United States mills made 72,186 tons or 5 per cent less than in the same time of 1927. The total North American output for the eleven-month period was 229,982 tons or 7 per cent greater than in the similar period of 1927. During November the Canadian newsprint mills operated at 86.9 per cent of rated capacity, and the U. S. mills at 86.6 per cent. Stocks of newsprint at Canadian and United States mills at the end of November were equivalent to 4 days' average production.

The price position of newsprint is still a mixed-up affair. There have been conferences in Canada between American and Canadian manufacturers, but as yet nothing has been announced regarding the contract basis for the new year. The opinion general in the trade is that a price somewhere in the vicinity of $55 or $57 a ton f. o. b. mills will be promulgated on standard news in rolls for 1929 delivery, which of course represents a considerable decrease from the price level prevailing in 1928. Some sort of working agreement is reported to have been entered into by the manufacturers whereby production will be allocated on a percentage basis, and thus prevent a flooding of the market with supplies. Meantime, consumption of print paper is on a fairly high level, and was exceptionally heavy in the pre-holiday period. Publishers are reported proceeding in making contracts for the new year, though it is presumed that the matter of price is being left open.

The merry little price war in the box board industry continues. Buyers in the East are still securing plain chip board down to $30 per ton delivered in New York City, and filled news board at as low as $32.50 a ton delivered. Some mills have revised their quotations upward, but others are accepting orders at the low figures to which prices were suddenly reduced a month or so ago when certain manufacturers apparently had an axe to grind with competitive manufacturers. Consumers meanwhile have bought heavily, covering their requirements in board in a good ways ahead, so that board mills—or some of them at any rate—have a large tonnage of orders booked.

Wrapping paper is quoted on stationary levels and is marked by fair demand, while tissue has had a period of market activity although ruling quieter at present. Fine papers are moving along at a steady pace and in comparatively large volume, with quoted prices well maintained. There is also a steady movement of book paper, both on contract and to transient buyers.

Manufacture of paper grocers' bags is 95 per cent in conformity with the simplified program adopted by the industry, according to a statement just made public by the Division of Simplified Practice of the U. S. Department of Commerce. This program, as originally adopted by the industry, reduced the variety of bags from 6,280 to 4,700.

The Finest Raw Materials

Quality goes through and through in the manufacture of Diamond 58% Soda Ash. The various raw materials are selected for their individual quality with the most meticulous care.

At every important stage of manufacture a corps of expert chemists concentrate their skill and knowledge in safeguarding the quality of Diamond Alkalies. The result is a product which has gained a national reputation for its unvarying purity and uniformity.

DIAMOND ALKALI COMPANY

Pittsburgh, Penna. *and Everywhere*

Papermaking Rags

As customarily is the case, the market for papermaking rags grew distinctly quiet as the year-end approached, and not much new business has developed since the turn of the year. It is something more or less proverbial in the rag trade that demand from consuming quarters diminishes to almost nothing during the holiday and inventory season, and immediately after. Papermakers confine their buying solely to actually and urgently needed supplies, and since many mills close down for a time while compiling inventories and making necessary repairs to machinery, there is not much need of a pressing character for rags. Consequently, it is seldom that business in any worthwhile volume develops at this period of the year, and the market situation recently has been exactly along this line. Here and there some little call for certain grades of rags has emanated from paper mills, and a fair amount of business of a localized sort has been negotiated, but demand has lacked snap as well as volume, and as yet the market is still in a waiting condition—waiting for consumers to manifest greater interest and to resume purchases on something near to a normal scale.

So far as is observed, the rag situation from a statistical standpoint is in favor of buyers. There is no shortage of rags, of any consequence. Some particular descriptions are in relatively low supply, to be sure, and consumers probably experience a little difficulty buying such grades, but this is the exception to the general rule at present, and there is nothing in view at the moment to indicate that any scarcity of importance is likely to develop. Imports of papermaking rags into the United States during 1928 scored an appreciable increase over the preceding year, which doubtless means that a larger supply now is available of foreign rags than was the case at this time a year ago. Also, the domestic production apparently has held up to normal, or at least has equalled that of the last several years. Perhaps as the winter drags on and collections through the country are handicapped by inclement weather and other deterrent factors that the supply condition may tighten up somewhat, but there appears no reason to believe that any serious trouble will arise for consumers in securing all the rags they may require. It may be that if the winter is a severe one, or that if rag consumption reaches unexpectedly large tonnage that prices of some classes of rags may advance a bit, but there is at present nothing in view to prompt one to believe that any sharp rise in the market is likely. The trend of prices over the next few months will depend on the scope of demand from consuming quarters; possibly market fluctuations will be witnessed, and some rags will appreciate in value, but paper manufacturers mostly express the opinion that no important changes in the market will be seen.

Prices as quoted have ruled fairly steady during the recent quiet period. Dealers have not pressed their offerings to mills, and in a majority of cases have pursued a waiting policy while appreciating that mill customers have not been in a purchasing mood. Some grades have shown a slight downtrend in value but not enough to constitute an important market change. Roofing stock has moved off a bit to where sales of No. 1 domestic packing or cloth strippings have been reported sold to felt mills at 1.65 cents a pound f. o. b. New York, and No. 2 domestic roofing stock at 1.35 cents. New cuttings of certain descriptions have displayed pronounced price firmness, notably new unbleached muslins, which are quoted at 11 to 11.25 cents a pound New York; new light silesias, at 7.50 cents or higher; fancy shirt cuttings, at 5.50 to 5.75 cents, and blue overall cuttings, at 7 to 7.25 cents. New No. 1 white shirt cuttings continue quiet and are reported available at 9.50 to 10 cents per pound at dealers' shipping points. Old white cottons have moved in a routine fashion and at maintained prices of around 6 cents a pound f. o. b. shipping points for No. 1 repacked whites, and 2.50 to 3 cents for No. 2 repacked whites, while repacked thirds and blues have brought 2.25 to 2.50 cents at dealers' points. Little business and little change has been recorded in imported rags.

Average quotations f. o. b. shipping points and ex dock New York are as follows:

New Stock	New York and Chicago
White shirt cuttings, No. 1	9.50-10.00
White shirt cuttings, No. 2	6.00- 7.00
Fancy shirt cuttings	5.50- 5.75
Washables, No. 1	4.25- 4.50
Unbleached muslin	11.00-11.50
White lawns	9.00- 9.25
Overall cuttings, blue	7.00- 7.25
Black silesias	4.25- 4.50
Light flannelettes	7.75- 8.00
Canton flannels, bleached	9.50- 9.75
Canton flannels, unbleached	8.50- 8.75
Shoe cuttings, bleached	7.50- 8.00
Shoe cuttings, unbleached	6.00- 6.50
Light silesias	7.50- 7.75
O. D. khaki cuttings	5.25- 5.50
Mixed khaki cuttings	5.00- 5.25
Corduroy cuttings	3.25- 3.50
Cottonade cuttings	3.00- 3.25
Linens, No. 1, white foreign	13.00-14.00
Light prints foreign	2.75- 3.00
Old Stock—	
Whites, No. 1, repacked	5.50- 6.50
Whites, No. 2, repacked	2.50- 3.00
Whites, house soiled	2.00- 2.25
Whites, street soiled	1.85- 2.00
Lace curtains	5.50- 5.75
Thirds and blues, rough	1.75- 1.90
Thirds and blues, repacked	2.25- 2.50
Black stockings	4.10- 4.25
Cotton canvas, No. 1	4.75- 5.00
White cotton batting	4.25- 4.50
Roofing, No. 1 (cloth strippings)	1.60- 1.70
Roofing, No. 2	1.30- 1.40
Linsey, garments, foreign	1.75- 1.80
Dark colored cottons, foreign	1.55- 1.60
Blue linens, foreign	3.75- 4.00
Gray linens, foreign	4.00- 4.25
White linens, foreign	7.50- 8.00
Light prints, extra foreign	1.80- 2.00

Rope and Bagging

Demand from paper mills for old rope has kept up fairly well despite the dullness obtaining in most classes of papermaking material during the holiday and inventory period. Dealers report that they have been able to dispose of practically all the old rope reaching the market, and that buyers are granting firm prices and exhibiting eagerness for further supplies. Domestic No. 1 old manila rope is selling at 4 cents a pound f. o. b. dealers' shipping points, and doubtless in some instances this price has been exceeded as instances have come to light where paper manufacturers have paid up to 4.25 cents, while No. 1 imported old rope is bringing 3.50 to 3.75 cents a pound ex dock New York. Strings of most kinds have been quiet other than for the routine demand emanating from consuming quarters, and prices have recorded no change of note. Bagging is in a slow market position

"Superior" Rosin Size

In Tank Cars or Drums

SUPERIOR CHEMICALS
TRADE MARK

QUALITY STILL PAYS DIVIDENDS

The purchase of a really good cigar by one who enjoys his smokes is money well spent. So it is with everything else, whether it be a pair of shoes, a ton of coal or a tank car of "SUPERIOR" ROSIN SIZE.

The makers of SUPERIOR ROSIN SIZE are ever on guard to investigate and improve the quality and distribution of this product, in order that the paper mills in the United States, Canada, Great Britain and Continental Europe may be afforded the highest quality Size delivered to them as economically and uniformly as possible.

SUPERIOR ROSIN SIZE is truly the most used sizing agent today (here and abroad). It is constantly winning new friends and keeping them.

Paper Makers Chemical Corporation

Easton, Pa.
Atlanta, Ga.
No. Milwaukee, Wis.
Savannah, Ga.
Kalamazoo, Mich.
Marrero, La.
Jacksonville, Fla.
Holyoke, Mass.
Stoneham, Mass.
Portland, Me.
Boston, Mass.
Albany, N. Y.
Carthage, N. Y.
Lockport, N. Y.
Pensacola, Fla.

AND ASSOCIATES

C. K. Williams & Co., Easton, Pa., Emeryville, Cal., Malaga, Spain
Geo. S. Mepham & Company, East St. Louis, Ill.
Paper Makers Chemicals, Ltd., Erith, Kent, Eng.
Paper Makers Importing Co., Easton, Pa., St. Austell, Eng.
Vera Chemical Co. of Canada, Ltd., Freeman, Ont.

"There is a Superior Plant near you"

SUPERIOR PRODUCTS

Rosin Size
Wax and Special Waterproofings
Satin White
English and Domestic Clays
Casein
Casein Solvents
Foam Killers
Felt Soaps
Soap Powder
Vegetable Tallow
Anti-Froth Oil
Softeners
Colors Dry and Pulp

Paper Dyeing Problems

THE laboratories of the National Aniline & Chemical Company, Inc., are manned by practical dye specialists—skilled in the art of dye application — who are ready at all times to visit your mill and assist you in obtaining desired shades. You are invited to use this service.

Prompt shipments are made from stock maintained at each National branch office.

National Aniline & Chemical Co., Inc.
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BOSTON PROVIDENCE CHICAGO CHARLOTTE TORONTO PHILADELPHIA SAN FRANCISCO

NATIONAL DYES

Commercial Sulphate of Alumina

Liquid Chlorine

Single Unit Tank Cars
150-Lb. Cylinders
Multi-Unit Tank Cars (1-Ton Containers)

Standard Bleaching Powder
Natrona Porous Alum

Pennsylvania Salt Mfg. Company
Philadelphia, Pa.

RUSS GELATIN CO.

WORKS—WESTFIELD, MASS.

MANUFACTURERS OF

GELATIN and GLUE
ANIMAL SIZING GLUE STOCK

LARGEST SPECIALISTS IN AMERICA ON
FINE WRITING PAPER SIZING

E. F. RUSS COMPANY 287 Atlantic Avenue BOSTON, U. S. A.

also, although regular users of this commodity are absorbing supplies in their usual manner and meeting steady prices. No. 1 scrap bagging is quoted at around 1.65 cents per pound f. o. b. dealers' shipping points, and roofing bagging at 1.25 to 1.35 cents.

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.60-1.70
Gunny, No. 1 foreign	1.50-1.60
Scrap bagging, No. 1	1.60-1.70
Roofing bagging	1.25-1.35
Wool tares, heavy	2.00-2.25
Wool tares, light	1.75-2.00
Manila rope, No. 1 foreign	3.50-3.75
Manila rope, No. 1 domestic	4.00-4.25
Sisal strings	1.50-1.75
Mixed strings	.90-1.10

Old Paper

The trend in old paper prices has been downward—a customary feature in the market at the tailend of the year. With board and paper mills in numerous cases shut down for repairs and inventory, demand for waste paper has dropped off substantially, and as a reseult market values have eased in most quarters and on most grades. There has been no bad break in prices, the decline being very orderly though on the whole amounting to a fairly broad decrease in paper stock costs to mills.

Shavings are quoted at around 2.80 cents a pound f. o. b. shipping points for No. 1 hard white shavings of the usual run of quality, while much higher or up to 3.10 cents is asked for special packing containing a good percentage of rag fibre, and on a range of 2.25 to 2.60 cents at dealers' points for soft white shavings, according to quality. Ledger stock has eased off to around a basis of 1.50 to 1.60 cents a pound for the cheaper grade f. o. b. New York, and old No. 1 kraft paper has moved down in price to where sales to mills at 1.80 cents New York have been reported. Books are selling at around 1.55 cents per pound f. o. b. New York for No. 1 heavy stock, and at 1.30 cents for No. 1 crumpled books. Folded news is down to as low as 65 cents per hundred pounds f. o. b. New York although higher prices are quoted in the Middle West, and old No. 1 mixed paper is quoted at 50 to 60 cents a hundred pounds.

The following are quotations named by dealers f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.70-3.10
Hard white shavings, No. 2	2.50-2.75
Soft white shavings	2.25-2.60
Colored shavings	1.00-1.25
Heavy book, No. 1	1.50-1.60
Crumpled book, No. 1	1.25-1.35
Ledger stock	1.50-1.75
Kraft, No. 1	1.80-1.90
New kraft cuttings	2.40-2.60
Manilas, No. 1	.75- .85
Folded news	.65- .75
Sulphite mill wrappings	.75- .85
Old corrugated boxes	.70- .80
New corrugated box cuttings	.80- .90
Mixed paper, No. 1	.50- .60
Common paper	.40- .50

Pulpwood

There is little doing in pulpwood at present, but the season for this commodity is expected to get under way shortly. The trend of prices recently has been downward. The American Paper and Pulp Association reports through its Woodlands Section that the f. o. b. mill prices for peeled spruce pulpwood in Maine during the third quarter of 1928 averaged $17.86 per cord, and in New York State $18.53 a cord, while rough spruce averaged $13.90 in Maine and $14.54 in Michigan and $15.40 in Wisconsin.

During the first eleven months of 1928 exports of pulpwood from Canada, all of which came to the United States,

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If you are confronted with two-sidedness we especially recommend

FAST BOND YELLOW N T G G
FAST BOND ORANGE N T G R
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An ideal wetting-out and softening agent for new and old press felts. An effective cleaning agent in place of sulphuric acid. Strictly neutral.

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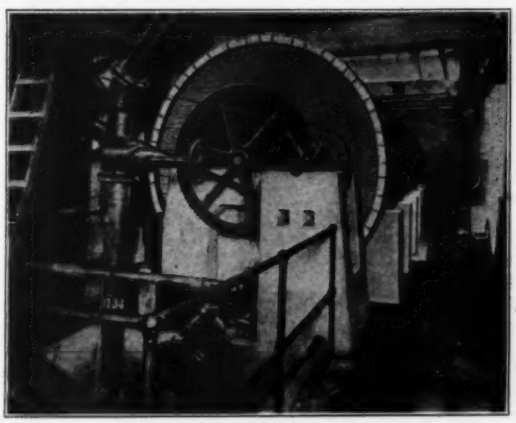

Paper Mill Tanks

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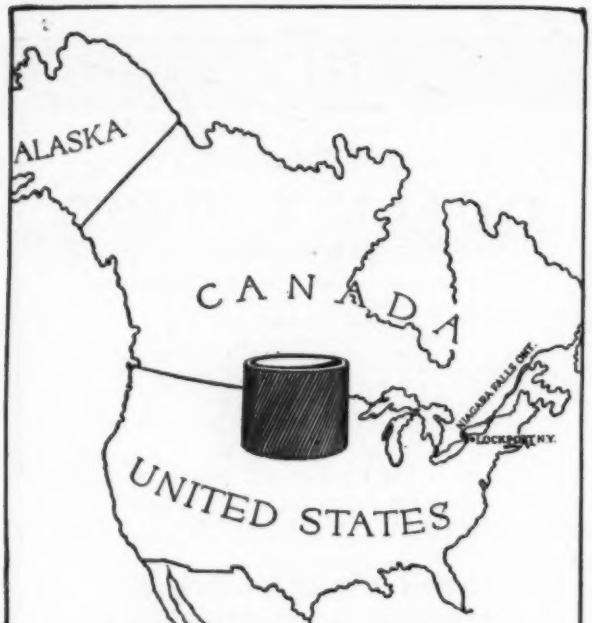
Hauser-Stander has been building tanks for over fifty years and has particular knowledge of paper mill men's requirements.

The Hauser-Stander Tank Co.
CINCINNATI, OHIO



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Improve your Quality
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The use of Efficient Equipment

for

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2. Acidmaking
3. Cooking
4. Screening
5. Dewatering
6. Drying

We cover the whole field

G. D. Jenssen Co.

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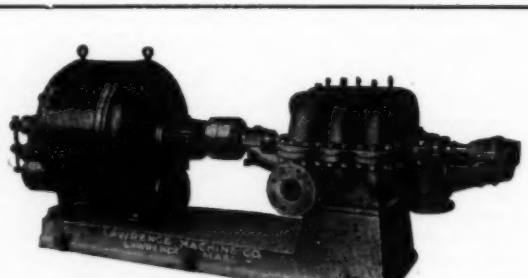
Sole Representatives

For: Paper Machinery, Ltd.
Montreal, Quebec



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Some of our competitors try to imitate, but none can equal.

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LAWRENCE MACHINE & PUMP CO.
LAWRENCE, MASS.

Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

totaled 1,482,598 cords, valued at $15,805,576, compared with 1,489,314 cords of a value of $15,162,484 in the same time of 1927.

Mechanical Pulp

The market for mechanical wood pulp displays a steady undertone which appears to be gathering strength right along, and which is reflected in a firmer maintenance of prices. Demand is fair, though fair only, it is reported, but the principal factor in the situation is that producers are strictly adhering to certain prices and are refusing to sell below such levels while contending that they are eking out little enough profit on their product as it is. Grinders in Canada generally are quoting $27 a ton for prime spruce ground wood, freshly ground, f. o. b. pulp mills for current shipment, and are anything but disposed to accept orders at less, while domestic producers are asking around this same price, depending on the air dry test and the freight to consuming centers. Imported ground wood of Scandinavian origin is quoted at around $33 per short ton ex dock New York and other American Atlantic ports for dry pulp.

Statistically, ground wood is in a stronger market position. Stocks at American producing mills at the end of October, according to the American Paper and Pulp Association, totaled but 76,818 net tons, which were at the lowest point at any time previously last year, and compared with 86,438 tons at the end of September. Production in October amounted to 85,513 tons, which was well above the 70,308 tons produced domestically in the preceding month, whereas a total of 92,301 tons was used in October, against 76,531 tons in September.

Chemical Pulp

Although current demand for chemical wood pulp has decreased materially recently, there is a steady movement of fair dimensions against contracts and old orders, and the domestic pulp mills are reported keeping fairly well occupied. The market tone is steady to firm, and quoted rates are being maintained, while manufacturers in general anticipate a fully-stabilized market over the winter and a sufficient demand from consuming quarters to absorb about all of the output of pulp of domestic origin that is due to become available. Prices at the moment show practically no change from the levels last reported. Bleached sulphite is firm at 3.75 to 4 cents a pound for the most popular brands though up to 4.75 cents is asked for some sulphite, and No. 1 strong sulphite of news quality is quoted 2.50 to 2.75 cents a pound at pulp mills and No. 1 book grade sulphite at 2.75 to 3 cents. Domestic bleached soda pulp is holding its own in price at 3 to 3.25 cents at producing plants, and No. 1 domestic kraft is quoted at 2.75 cents or higher f. o. b. pulp mills.

Production of chemical wood pulp in the United States in October amounted to 128,834 net tons, showing a fair increase over the 113,865 tons produced in the preceding month. Mill stocks at the end of October aggregated 23,111 tons, against 25,441 tons a month previously, according to the American Paper and Pulp Association.

Quotations f. o. b. pulp mills are as follows:

Bleached sulphite	3.75-4.75
Easy bleaching sulphite	2.75-3.00
Unbleached sulphite, No. 1 strong (news grade)	2.50-2.75
Unbleached sulphite, No. 1 book	2.75-3.00
Soda pulp, bleached	3.00-3.25
Mitscherlich, unbleached	3.00-3.25
Kraft, No. 1	2.75-3.00
Screenings, refined	1.40-1.60

Chemicals

The beginning of a new year witnessed few changes of importance in the contract prices of paper and pulp producing chemicals. Previous quotations on bleaching powder, caustic soda and soda ash are continued, and the contract basis on brimstone is the same. Casein is a trifle higher at from 15.25 cents per pound upwards for the imported article, and 15 cents upwards for domestic casein.

Average quotations are as follows:

Alum, lump ammonia	3.50 - 3.75

SOLVAY PRODUCTS

SODA ASH

CAUSTIC SODA

LIQUID CHLORINE

Contract or Spot Delivery

In tank cars and multiple unit cars.

Write for Prices

SOLVAY SALES CORPORATION

Alkalies and Chemical Products Manufactured by The Solvay Process Company

40 RECTOR STREET NEW YORK

Boston Syracuse Chicago Indianapolis Cleveland Cincinnati Pittsburgh Detroit Philadelphia Kansas City St. Louis Atlanta

Uncle Jake says—

"The making of New Year resolutions with many people reminds me of the average marriage contract. The woman promises to obey—the man promises to endow her with all of his earthly goods and then from that minute she does as she pleases while he spends his money on red neckties and silk socks."

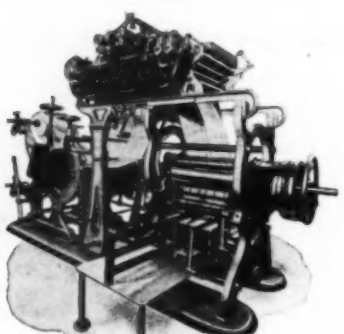
We do not ask you to make any resolutions, but we do ask you to consult your own best interest by using

KVP PAPERS

the papers that have made us thousands of business friends.

KALAMAZOO VEGETABLE PARCHMENT CO. KALAMAZOO, MICH.

A-S MACHINE CO.



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One of several designs used by Napkin Manufacturers and Converters. We design and manufacture Toilet Winders, Napkin Folders, Crepe Machines, Package Presses and Paper Specialty Equipment. Write for Catalogue.

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PAPER CUTTERS

Single—Duplex—Diagonal

CUTTER KNIVES
PATENT TOP SLITTERS

HAMBLET MACHINE CO.

LAWRENCE, MASS.

New Papers

Writing—	
White rag	15-40
White sulphite	9-30
Colored rag	15-40
Colored sulphite	8-30
Ledger—	
White rag	16-40
White sulphite	9-30
Colored sulphite	8-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	7-30
Colored sulphite	7-30
Colored rag	15-40
Books—	
No. 1 S. & S	5.75- 8.00
Machine finish	5.50- 8.00
English finish	5.50- 8.00
Coated and enameled	8.00-14.00
Lithograph, [illegible]	8.00-15.00
Newsprint—	
Rolls, contract	(Nominal)
Rolls, transient	3.00- 3.25
Sheets	3.25- 3.50
Side runs	2.75- 3.00
Cover stock—	
Coated, both sides	-10.25
Coated, one side	-10.15
Tissue—	
No. 1 white, 20x30	.75- .90
No. 2 white, 24x36	.75- .90
No. 1 Manila, 24x36	.70- .80
Kraft	.90- 1.00
Wrapping—	
No. 1 kraft	5.50- 6.00
No. 2 kraft	4.25- 4.75
Southern kraft	4.25- 4.50
Boards—	**New York and Chicago**
Solid news	35.00-40.00
Straw	52.50-57.50
Plain chip	30.00-35.00
White coated chip	45.00-50.00
Manila coated chip	40.00-45.00
Binder's board	65.00-70.00

Chemicals

(*Continued from page* 1851)

Alum, lump starch	3.75 - 4.00
Blanc fixe, powder	3.50 - 3.75
Bleaching powder	2.00 - 2.35
Brimstone (long ton, at mine)	18.00 -20.00
Casein (duty paid)	15.00 -17.00
Caustic soda, spot delivery	2.90 - 3.00
China clay, domestic washed	8.00 -10.00
China clay, foreign	15.00 -20.00
Rosin, Grade E	9.45 - 9.50
Satin white	2.00 - 2.25
Soda ash, 50 per cent light (bags)	1.32½- ....
Starch, papermakers', in bags	4.07 - ....
Talc (ton)	16.00 -18.00

Market Quotations

Issued by H. D. Knox & Co., 44 Broad St., New York

The quotations mentioned below are more or less nominal in some cases owing to the inactivity of the securities, but we invite inquiries on these and other allied industries' securities and we will endeavor to furnish actual markets.

BONDS	**Bid**	**Asked**
Abitibi Fibre Co. 6s, 1941	104	
Abitibi Power & Paper 5s, 1953	85½	86½
American Sales Book 6s, 1939	102½	104
Advance Bag & Paper 6s, 1952	95	98
Bastrop Pulp & Paper 6s, 1940	104½	
Beaver Products 7½s	109	111
Bedfrod Pulp & Paper 6s, 1942	98	100
Belgo Canadian Paper 6s, 1943	101	102
British Columbia Pulp & Paper 6s	86	88
Brompton Pulp & Paper 6s, 1935	103	
Brush Moore Paper 6s, 1937	99¾	
Bryant Paper Co. 6s, 1942	100	101
Celotex Co. 6s, 1936		96
Canada Paperboard Co. 7s, 1937	100	103
Central Paper Co. 6½s, 1941	86	87
Central Paper Co. 6s, 1933	87	89
Central Paper Co. 7s	87	
Champion Fibre 6s, 1941	99	100
Champion Paper Co. 6s, 1941	95	98
Champion Coated Paper 6s	102	
Columbia River Paper Mills 6s	98	
Defiance Paper Co. 6s, 1939	98	100
Dells Paper & Pulp 6s, 1939	95	98
Donnacona Paper Co. 5½s, 1948	92	94
Eastern Mfg. Co. 7s, 1938	100½	101½
Escanaba Paper Co. 6s, 1939	98	100
Filer Fibre 7s, 1937	94	97
Fitchburg Paper 5s, 1929	99	
Glatfelter Paper 6s, 1938	94	96
Hawley Pulp & Paper 6s, 1946	97	
Hoberg Paper & Fibre 7s, 1937	94½	96
Industrial Fibre Co. 8s	100	102
Itasca Paper Co. 6s	99	
Itasca Paper & Prairie River 5½s	100	
Jessup & Moore Paper 6s, 1945	75	78
Kalamazoo Vegetable Parchment 6s, 1938	99	101
Manitoba Paper Co. 6s	103	105
Mead Fibre Co. 7s, 1937	100	
Munising Paper 6s, 1936	98	
Marathon Paper Co. 5½s, 1942	99	
Marinette & Menominee Paper Co. 7½s	102½	103½
Mead Pulp & Paper Co. 5s	95½	
Mengel Co. 7s, 1934	104	
Minnesota & Ontario Paper Co. 6s	90	95
Missisquoi Pulp & Paper Co. 7s, 1929	99	
Missisquoi Pulp & Paper Co. 6s	98	
Monroe Paper Products Co. 7½s	97	99
Murray Bay Paper Co. 6½s	103½	
Oswego Falls Paper Co. 6s, 1941	98	100
Orono Pulp & Paper Co. 6s, 1943	102	
Orono Pulp & Paper Co. 6s, 1941	97	
Parker Young Co. 6½s, 1944	100	102
Paper & Textile Machinery Co. 7s	100	103
Patterson Parchment Paper 6s, 1938	101	102½
Peerless Paper Co. 6s	98	100
Penobscot Chemical Fibre 6s, 1942	102	104
Queen City Paper Co. 7s	97½	
Riordan Pulp & Paper Co. 6s, 1942	102	
River Raisin Paper Co. 6s, 1936	98½	101½
Rolland Paper Co. 6s, 1937	101	103
St. Regis Paper Co. 6s, 1931	100	101
St. Annes Paper Co. 6½s, 1953	103	105
St. Croix Paper Co. 5s, 1928	95	
St. Helena Pulp & Paper 6s, 1941	99	
St. Lawrence Pulp & Lumber Co. 6s	10	15
Spruce Falls Power & Paper 5½s	98	100
Stevens & Thompson Paper 6s, 1942	95	97
Southern Advance Bag & Paper 6s, 1947	93	96
Smith (Howard) Paper Co. 6½s, 1941	103	
Smith (Howard) Paper Co. 5½s, 1953	94	96
Taggart Bros. 6s, 1941	95	100
Taitx Paper & Color Industries 6s	88	90
Ticonderoga Pulp & Paper 6s, 1940	100	102
Ticonderoga Pulp & Paper 5s, 1930	96	98
Tonawanda Paper Co. 5½s	99½	101
United Wall Paper 6s, 1947	96	98
Watab Paper Co. 6½s, 1942	102½	104
Whitaker Paper Co. 7s, 1938	108	109
Warren (S. D.) 6s, 1945	104	105
Westfield River Paper Co. 7s	88	90

(*Continued on page* 1861)

The B Co. Inc. QUALITY PULPS

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"HAFSLUND BEAR"
Bleached Sulphite

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"FORSHAGA"
Bleached Sulphite

KRAFT HURUM

"HURUM SPECIAL"
Extra Strong Kraft

NORWAY SPECIAL KOOS BAC

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Extra Strong Kraft

Fresh Monthly Shipments—No Closed Winter Season

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Importers of Chemical Pulps
BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
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Dealers in
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E. B. EDDY COMPANY, LTD., Hull, Canada
CANADIAN KRAFT LIMITED, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp
Howard Smith Paper Mills, Montreal, Quebec.
EASTERN AGENTS of Sulphite Pulp
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PULP

PERKINS-GOODWIN CO.
Established 1846
551 FIFTH AVENUE, NEW YORK

PAPER

EXPORTS

Exports of paper from the United States in October showed an increase in point of value as compared with the preceding month and also as contrasted with the corresponding month of last year, according to official statistics compiled and issued by the U. S. Department of Commerce in Washington. The total exports of paper of all kinds from this country in October reached a value of $2,707,479, against $2,098,810 in September this year and $2,281,670 in October, 1927. Exportations in the first ten months of this year amounted in value to $25,349,458, recording a fair gain over shipments valued at $22,367,917 during the similar period of 1927.

Exports of newsprint paper in October were 2,660,536 pounds, valued at $100,385, compared with 1,203,680 pounds of a value of $46,720 in the preceding month, and 1,313,845 pounds of a value of $65,281 in October a year ago. Exports of book paper, not coated, amounted to 1,938,507 pounds of a value of $147,504 in October, against 1,543,001 pounds of a value of $108,625 in the preceding month, and 1,315,767 pounds of a value of $113,231 in the corresponding month of last year. Wrapping paper exports in October were valued at $221,986, showing a slight decline from the shipments valued at $226,626 in the same month a year ago, while writing paper exports climbed from a value of $132,613 in October, 1927, to $231,475 in the same month this year. Tissue paper shipments were valued at $89,180 last October, contrasted with $105,982 in the similar month a year ago.

Exports of box board increased sharply from a total value of $98,690 in October, 1927, to $145,652 in the same month this year, while exports of strawboard and other paper board reached a value of $164,516, contrasted with $130,709 in October, 1927.

IMPORTS

Wood Pulp

The market for imported wood pulp has been comparatively quiet recently, following a period of rather heavy buying by paper and board manufacturers, yet in spite of the limited demand coming from consuming quarters, a steady tone characterizes the market and prices of pulp appear to be in a better stabilized position than in a long time. Importers and agents in New York are not pressing sales while realizing that mill customers are not in a purchasing mood during the holiday and inventory season, and immediately after, and are waiting out the market in the confident belief that a broader demand will arise later on.

The markets at primary sources abroad are firm, according to reports, and in a good statistical condition. Most producers in Scandinavia and elsewhere in Europe have sold sufficient of their output ahead to relieve them of any worry about further sales for a time, and are maintaining quotations on a steady level. Nearly all the expressions of opinion on the subject are to the effect that market prices will hold over the balance of the winter, and that, unless some unforeseen developments occur, no important change in pulp values is likely to be witnessed for some time. In Sweden, pulp manufacturers have reached an agreement with their mill operatives which will forestall any labor disturbance in the pulp manufacturing industry of that country for two years, so that there seems small probability of any strike, lockout or other such difficulty developing to curtail pulp production in Sweden. A factor of prime importance in the markets in Europe is that consumption of and demand for chemical wood pulp from domestic markets in the various European countries has increased substantially, thereby creating a stronger supply condition and prompting manufacturers in Europe to be less eager about selling pulp for export to America or at least causing them to exert less pressure in making sales in this direction.

Importations of wood pulp into the United States during October, 1928, came very near to establishing a new high record for any month last year up to that point, being just a little under the record-breaking imports in January of last year. October imports of chemical pulp amounted to 133,136 long tons, valued at $7,673,193, as compared with 111,955 tons of a value of $6,595,102 imported in September last year, 140,394 tons on January last year, and 119,679 tons of a value of $7,338,253 in October, 1927. The October imports brought the total for the first ten months of 1928 up to 1,074,346 tons, giving a monthly average of 107,434 tons, contrasted with an average of 101,615 tons monthly in the corresponding time of 1927. Mechanical pulp imports in October were 21,325 long tons, valued at $539,571, compared with 19,601 tons of a value of $477,606 in the preceding month, and 18,920 tons of a value of $507,690 in October, 1927. Imports in the first ten months of last year totaled 180,715 tons, valued at $4,430,994, against 171,710 tons of a value of $4,787,038 during the similar period of 1927.

Bleached sulphite of ordinary grade is quoted at 3.90 to 4 cents per pound ex dock New York and other American Atlantic ports, with extra quality ranging in price up to 4.25 cents. Prime strong unbleached sulphite is steady on a quotable level of around 2.55 to 2.60 cents on the dock, while prime easy bleaching sulphite is quoted at 2.75 cents upwards, and prime standard Swedish kraft pulp at 2.50 to 2.70 cents, depending on the mill brand. Scandinavian ground wood is around a price basis of $33 per short ton ex dock New York.

Current market quotations ex dock New York, and receipts at the port of New York during December, 1928, follow:

Bleached sulphite, No. 1	3.85- 4.25
Unbleached sulphite, strong No. 1	2.55- 2.75
Unbleached sulphite, No. 2	2.35- 2.55
Easy bleaching sulphite	2.75- 3.00
Mitscherlich unbleached, genuine	3.00- 3.25
Mitscherlich unbleached, ordinary	2.60- 2.75
Kraft, standard Swedish	2.50- 2.70
Ground wood, per ton (dry)	32.00-33.00

Castle & Overton, 5,634 bls. from Hamburg, 150 Sundsvall, 150 Svartvik and 1,470 Rotterdam; Bulkley, Dunton & Co., 1,675 bls. from Iggesund, 2,000 Sundsvall, 1,000 Essvik, 2,000 Hamburg and 449 Gothenburg; Chemical National Bank, 625 bls. from Iggesund and 510 Oslo; M. Gottesman & Co., 750 bls. from Iggesund, 830 Rotterdam and 1,125 Gothenburg; Pagel, Horton & Co., 1,200 bls. from Hornefors and 2,250 Sundsvall; Farmers Loan & Trust Co., 400 bls. from Oslo; J. Anderson & Co., 2,160 bls. from Oslo, 1,520 Sarpsborg and 1,250 Greaker; Perkins-Goodwin Co., 750 bls. from Oslo and 25 Gothenburg; A. P. W. Paper Co., 10,135 bls. ground wood from Liverpool, N. S., 5,600 Chandler and 4,471 Sheet Harbor; E. M. Sergeant Co., 620 bls. from Oslo and 2,057 Gothenburg; Atterbury Bros., 2,250 bls. from Oslo; Scandinavian Pulp Agency, 9,405 bls. from Sundsvall, 3,780 Skutskar and 3,125 Wifstavarf; Johaneson, Wales & Sparre, 275 bls. from Sundsvall, 425 Svartvik and 2,825 Soraker; Hudson Trading Co., 500 bls. from Skutskar; Woodpulp Service Corp., 250 bls. from Gothenburg; Parsons & Whittemore, 310 bls. from Gothenburg; Central National Bank, 450 bls. from Soraker; Price & Pierce, 2,500 bls. from Gothenburg; American Exchange Irving Trust Co., 128 bls. from Hamburg and 300 Bremen; Agasote Millboard Co., 634 bls. from Woods Island; O. E. Kiaer, 625 bls. from Greaker; E. J. Keller Co., 725 bls. from Oslo, 2,436 Hamburg and 200 Sundsvall; Order, 7,200 bls. from Hernosand, 1,400 Oslo, 1,120 Hamburg, 667 Helsingfors, 3,415 Raumo, 4,900 Viborg, 6,482 Kotka and 600 Bremen.

Paper Stock

Papermaking rag imports into the United States in the

Giving the Beaters a Lift

Conveyor or Gravity Feed Shredder

In the new mill of Taggart Bros. Co., Inc., Oswego, New York, one MITTS & MERRILL SHREDDER having a capacity of eight tons of dry stock per hour, shreds kraft pulp and discharges the stock by gravity into the chest where it is agitated until needed for the beaters.

The MITTS & MERRILL SHREDDER through it's economical method of preparing stock for the beater contributes much to the completion of the beater's work in the shortest possible time, thereby cutting down operating costs and speeding up the process of paper making.

MITTS & MERRILL SHREDDERS are built in sizes with spouts ranging from 18" to 45" wide. We will be glad to quote you on any size adapted to your requirements.

It gives the beater an economical lift.

MITTS & MERRILL

1013 Tilden Street, Saginaw, Mich.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 364 and 365 in the 1928 Paper and Pulp Mill Catalogue

Bathurst Power & Paper Company, Limited

PRICE & PIERCE, LTD.
17 East 42nd Street, NEW YORK CITY

ARE NOW THE

SELLING AGENTS
for Bathurst Pulp in the United States

Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in Sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

1864 1929

"Excelsior" Felts

For EVERY GRADE of PULP & PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*

Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

KNOX WOOLEN COMPANY
CAMDEN, MAINE

Sold by
BULKLEY, DUNTON & COMPANY,
75-77 Duane Street, N. Y.
and direct

first ten months of 1928, totaling 372,106,029 pounds of a value of $6,855,282, showed a fair increase over the 311,956,745 pounds of a value of $6,308,775 imported in the same period of 1927, according to official U. S. Department of Commerce statistics. Imports of waste bagging and waste paper also increased from 87,359,889 pounds in the first ten months of 1927 to 127,613,190 pounds in the similar time last year, while imports of old rope and miscellaneous paper stock declined from 55,891,517 pounds in 1927 to 51,220,428 pounds in the first ten months of 1928.

Importations of papermaking materials were fairly large in December, judging from the unofficial figures thus far available. Arrivals of all grades of paper stock excepting wood pulp at the port of New York last month, these data being taken from manifests of steamers reaching that port during the month, were as follows:

Old Rope—George W. Millar & Co., 154 coils; Brown Bros. & Co., 682 coils and 327 bls.; Ellerman's Wilson Line, 107 coils; Furness Withy & Co., 55 bls.; Kidder, Peabody & Co., 67 coils; Montell & McDonough, 6 bls.; Bank of the Manhattan Co., 37 coils; S. Birkenstein & Sons, 50 bls.; American Exchange Irving Trust Co., 143 coils and 35 bls.; Victor Galaup, Inc., 79 bls.; United Fruit Co., 4 bls.; International Purchasing Co., 195 coils; William Steck & Co., 260 bls.; W. Schall & Co., 61 bls. and 59 coils; Chemical National Bank, 110 bls.; Order, 283 coils and 302 bls.

Old Bagging—Katzenstein & Keene, 95 bls.; Banca Commerciale Italiano Trust Co., 482 lbs.; W. Schall & Co., 936 bls.; Bank of the Manhattan Co., 572 bls.; American Exchange Irving Trust Co., 63 bls.; Castle & Overton, 156 bls.; Darmstadt, Scott & Courtney, 255 bls.; Chase National Bank, 105 bls.; Whaling Waste Products Co., 104 bls.; E. J. Keller Co., 223 bls.; Order, 757 bls.

Rags—E. A. Stone Co., 12 bls.; American Rag Trading Co., 69 bls.; Lavin & Rosenberg, 16 bls.; W. Lowenthal & Co., 14 bls.; Atlas Waste Mfg. Co., 21 bls.; S. Birkenstein & Sons, 138 bls.; Railway Manufacturers Supply Co., 113 bls.; Victor Galaup, Inc., 460 bls.; Harmon G. Lichtenstein, 259 bls.; Jaffe Products Co., 25 bls.; Castle & Overton, 267 bls.; Ignazio Abela & Co., 20 bls.; Katzenstein & Keene, 943 bls.; E. J. Keller Co., 645 bls.; N. S. Maloof, 18 bls.; J. Cohen & Sons, 135 bls.; E. Mayer, 63 bls.; P. Garvan, Inc., 85 bls.; Marquardt-Hewitt Corp., 11 bls.; M. S. Godfrey, 31 bls.; Darmstadt, Scott & Courtney, 154 bls.; M. B. Speer & Co., 38 bls.; Alfred Bloch & Co., 270 bls.; Chatham & Phenix National Bank, 8 bls.; State Bank, 117 bls.; Anglo-South American Trust Co., 183 bls.; Bank of the Manhattan Co., 182 bls.; French-American Banking Corp., 419 bls.; Bank of the United States, 28 bls.; Union Bank & Trust Co., 274 bls.; Bankers Trust Co., 32 bls.; Equitable Trust Co., 136 bls.; Chase National Bank, 365 bls.; National City Bank, 164 bls.; Public National Bank, 5 bls.; Interstate Trust Co., 292 bls.; Corn Exchange Bank, 32 bls.; Guaranty Trust Co., 34 bls.; Philadelphia National Bank, 2 bls.; United States Lines, 15 bls.; International Purchasing Co., 59 bls.; Gallagher & Ascher, 90 bls.; Overton & Co., 95 bls.; American Express Co., 139 bls.; A. C. Fetterolf, 43 bls.; A. W. Fenton, Inc., 542 bls.; R. F. Downing & Co., 58 bls.; Willerton & Co., 13 bls.; Van Oppen & Co., 70 bls.; Brown Bros. & Co., 232 bls.; W. Schall & Co., 117 bls.; Goldman, Sachs & Co., 108 bls.; Panama-Pacific Line, 12 bls.; Order, 2,534 bls.

Miscellaneous Paper Stock—Darmstadt, Scott & Courtney, 312 bls.; William Steck & Co., 290 bls.; National Sanitary Rag Co., 63 bls.; J. Cohen & Sons, 15 bls.; Castle & Overton, 350 bls.; W. Schall & Co., 230 bls.; Alfred Bloch & Co., 41 bls.; E. J. Keller Co., 450 bls.; Chase National Bank, 682 bls.; Bank of the Manhattan Co., 328 bls.; American Exchange Irving Trust Co., 29 bls.; National City Bank, 15 bls.; New York Trust Co., 93 bls.; Brosn Bros. & Co., 49 bls.; Union Waste Co., 22 bls.; R. F. Downing & Co., 46 bls.; Van Oppen & Co., 24 bls.; Henry W. Peabody & Co., 166 bls.; Milton Snedeker Corp., 153 bls.; Order, 1,930 bls.

Paper

Imports of paper into the United States in October were valued at $14,370,483, compared with $11,890,203 in the preceding month, and $13,076,039 in the corresponding month of 1927, according to U. S. Department of Commerce statistics. Paper imports during the first ten months of last year were valued at $127,778,694, showing an increase over imports of a value of $121,891,108 in the same period of 1927.

Paper imports during December, 1928, were up to normal, judging from receipts through the port of New York. Arrivals of all kinds of paper at that port last month, these data being taken from manifests of steamers reaching New York during the month, were as follows:

Printing—Bank of Montreal, 4,862 rolls from Corner Brook; P. C. Zuhlke, 38 cs. from Antwerp; Keuffel & Esser Co., 131 rolls and 60 cs. from Hamburg; National City Bank, 129 bls. from Hamburg; Hudson Trading Co., 120 bls. from Sundsvall, 37 rolls Svartvik and 27 rolls Oslo; Dingelstedt & Co., 10 cs. from Bremen; Hoboken Trust Co., 4 cs. from Bremen; E. Dietzgen & Co., 105 cs. from Rotterdam; Steiner Paper Corp., 79 cs. from Rotterdam; H. Reeve Angel & Co., 140 reels and 83 bls. from Gothenburg and 431 reels Kotka; F. Henjes, Jr., 64 rolls from Hamburg; Gilman Paper Co., 648 reels from Gothenburg; Ossian Ray, 176 reels from Gothenburg; C. A. Redden, 16 bls. from London; Perkins-Goodwin Co., 648 reels from Bremen and 573 reels Hamburg; Gallagher & Ascher, 38 cs. from Bremen; Order, 2,112 reels and 20 cs. from Bremen.

Better Quality Lower Costs

What paper maker wouldn't listen to the method of obtaining this combination—better quality at lower cost? Before you give up the search for the answer in your mill, look up Quartz Quality Silicate Size. It cuts rosin and starch costs, by greater retention of both in the sheet. The other reason why you should investigate Quartz Quality Silicate Size is that it turns out a flat sheet that has increased strength and better finish.

Dozens of mills now use this "two-in-one" paper size. May we talk over its use in your mill?

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General Offices: Philadelphia
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DRYING FIDALGO SYSTEMS

on the Bale

FIDALGO DRYING SYSTEMS

(Not Connected With Any Pulp Mfg. Co.)

The Choice of

Union Bag and Paper Power Corporation, Tacoma, Washington
MR. HARDY S. FERGUSON, ENGINEER

Shaffer Box Company, Tacoma, Washington
MR. L. A. DeGUERRE, ENGINEER

Bogalusa Paper Company, Bogalusa, La.
MR. R. H. LAFTMAN, GENERAL MANAGER

Spaulding Pulp & Paper, Newberg, Ore.

Cornstalk Products Company, Danville, Illinois

Zellstofffabrik Waldhof, Mannheim, Germany

NO LICENSE FEE CHARGED

NOTICE—We make complete installations under specific performance guarantees and without charge for license under our broad patent claims. Bonded guarantees hold Customers harmless from infringement suits.

The above only authorized to operate under our trade mark and patent claims.

Our improved shredding, temperature and humidity control, best assurance high pulp test, uniform moisture content and cleanliness.

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SODA BLACK LIQUOR SULPHATE BLACK LIQUOR
SULPHITE WASTE LIQUOR

DUE TO
WIDE EXPERIENCE—THOROUGH ENGINEERING—PAINSTAKING CONSTRUCTION

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Hydraulic Equipment for Pulp and Paper Mills, Wall Board Plants, Etc.

600 Ton Pulp Press

PULP PRESSES
BALING PRESSES
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HYDRAULIC PUMPS
ACCUMULATORS
VALVES, FITTINGS, ETC.

Southwark Hydraulic Equipment is the choice of the largest and best known Pulp and Paper Mills throughout the country. They find Southwark products give the most efficient service under exacting conditions. Write for Bulletin No. 14.

2000-ton 12'-6"x4'-6"
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Wrapping—Robert Wilson Paper Corp., 46 cs. from Glasgow; National Consumers Paper Co., 11 bls. from Rotterdam and 12 bls. Gothenburg; Steffen Jones & Co., 7 cs. from Antwerp; Birn & Wachenheim, 152 cs. from Antwerp; J. H. Schroeder Banking Corp., 48 cs. from Hamburg; Fidelity Trust Co., 91 rolls from Bremen; C. K. MacAlpine & Co., 328 bls. from Gothenburg; Thomas Barrett & Son, 103 bls. from Gothenburg; H. Reeve Angel & Co., 4 cs. from Antwerp, 83 bls. and 117 rolls Gothenburg; Gilbert Paper Co., 111 bls. and 20 reels from Gothenburg; Wilkinson Bros. & Co., 42 bls. from Gothenburg and 82 bls. Oslo; Arkell Safety Bag Co., 334 reels from Gothenburg; Insight Paper Co., 836 reels from Oslo; D. S. Walton & Co., 41 bls. and 197 cs. from Gothenburg; Order, 13 cs. from Antwerp, 51 cs. Rotterdam, 77 bls. Hamburg and 20 cs. Bremen.

Cigarette—British-American Tobacco Co., 197 cs. from Southampton; P. J. Schweitzer, Inc., 214 cs. from Marseilles; DeMaudult Paper Corp., 378 cs. from Havre and 913 cs. St. Nazaire; Standard Products Corp., 234 from Havre; American Tobacco Co., 1,112 cs. from Bordeaux; Liggett & Myers Tobacco Co., 17 cs. from Bordeaux; M. Spiegel & Sons, 15 cs. from Genoa.

Writing—Guibont Freres & Co., 10 cs. from Havre and 5 cs. Southampton; Distinctive Writing Paper Co., 2 cs. from Southampton; C. A. Redden, 2 cs. from Southampton; Globe Shipping Co., 4 cs. from Southampton and 5 cs. Havre.

Drawing—H. Reeve Angel & Co., 8 cs. from London; International Forwarding Co., 12 cs. from Antwerp; Keuffel & Esser Co., 33 cs. from Hamburg and 4 cs. Rotterdam.

Filter—J. Manheimer, 185 bls. from Southampton; H. Reeve Angel & Co., 28 cs. from Southampton and 19 cs. London; A. Giese & Son, 10 bls. from Southampton; E. Fougera & Co., 34 cs. from Bordeaux; Blackman & Blackman, 10 bls. from Bordeaux; C. Sleicher & Schull Co., 12 cs. from Hamburg; Cunard Steamship Co., 10 bls. from Southampton.

Tissue—Schenkers, Inc., 235 cs. from Hamburg; F. B. Vandegrift & Co., 13 cs. from Liverpool; F. L. Kraemer & Co., 4 cs. from London; W. J. Byrnes & Co., 6 cs. from Liverpool; D. C. Andrews & Co., 3 cs. from Liverpool; G. W. Sheldon & Co., 6 cs. from London; Order, 5 cs. from Genoa.

Hanging—A. C. Dodman, Jr., Inc., 109 bls. from Southampton, 2 cs. Havre, 2 bls. Bremen and 135 cs. Liverpool; W. H. S. Lloyd & Co., 8 bls. from London; C. A. Haynes & Co., 17 bls. from London and 44 cs. Liverpool; F. J. Emmerich & Co., 109 bls. from Hamburg, 9 bls. Rotterdam, 13 bls. London, 55 bls. Liverpool and 7 pkgs. Havre; R. F. Downing & Co., 54 pkgs. from London and 10 cs. Havre; G. J. Hunken Co., 14 bls. from Bremen; J. E. Bernard & Co., 5 bls. from Bremen, 32 bls. Antwerp, 25 bls. Hamburg and 24 bls. Rotterdam; H. Bosch, 5 cs. from Bremen; Prager Co., 213 bls. from Antwerp; F. A. Binder, 8 bls. from Bremen; Order, 2 bls. from Hamburg and 16 cs. Bremen.

Photo—Globe Shipping Co., 359 cs. from Bremen; J. H. Schroeder Banking Corp., 116 cs. from Bremen and 65 cs. Hamburg; Gevaert Co. of America, 177 cs. from Antwerp; P. C. Zuhlke, 243 cs. from Antwerp; Medo Photo Supply Co., 9 cs. from London; J. J. Gavin & Co., 3 cs. from Liverpool; Order, 33 cs. from Hamburg.

Board—Hensel, Bruckman & Lorbacher, 40 bls. from Bremen; H. H. Ayer, Inc., 6 cs. from Havre; American Express Co., 18 cs. from Havre and 226 cs. Hamburg; Lagerloef Trading Co., 178 bls. from Hamburg; M. Cheramy, Inc., 24 cs. from Southampton and 3 cs. Havre; Houbigant, Inc., 10 cs. from Southampton; Grand Corrugated Paper Co., 222 reels and 8 bls. from Rotterdam; Adrian Vuyck, 312 reels from Rotterdam; Perkins-Goodwin Co., 138 rolls from Rotterdam; Haas Bros., 156 rolls from Rotterdam; Massa Paper Corp., 565 pkgs. from Rotterdam; Walker Goulard Plehn Co., 132 rolls from Rotterdam; R. F. Downing & Co., 20 cs. from Bremen; C. K. MacAlpine & Co., 19 bls. from Gothenburg; Goodwin Corp., 158 reels from Rotterdam; G. Thurnauer, 9 cs. from Antwerp; Scribner Press, 400 pkgs. from Rotterdam; Order, 91 bls. from Hamburg.

Miscellaneous—S. Gilbert, 70 cs. from Bremen; J. Beckhardt & Co., 53 cs. from Bremen; Hensel, Bruckman & Lorbacher, 20 bls. from Havre and 66 cs. Bremen; Universal Carloading & Distributing Co., 26 cs. from Bremen and 2 cs. Hamburg; Happel & McAvoy, 2 cs. from Southampton; Vernon Bros. Co., 50 cs. from Glasgow; H. Pollak, Inc., 5 cs. from London; American Exchange Irving Trust Co., 110 cs. from Havre; M. J. Corbett & Co., 6 cs. from Havre; J. W. Hampton Jr. & Co., 2 cs. from Havre; Keller-Dorian Paper Co., 29 cs. from Havre; Borden & Riley Paper Co., 20 cs. from Antwerp; Judson Freight Forwarding Co., 6 cs. from Hamburg and 68 cs. Bremen; Whiting-Patterson Co., 2 cs. from Southampton and 11 cs. Rotterdam; F. B. Vandegrift & Co., 13 cs. from Bremen and 5 cs. London; P. H. Petry & Co., 12 cs. from Bremen and 10 cs. Hamburg; F. L. Kraemer & Co., 24 cs. from Bremen; Richard Shipping Co., 6 cs. from Bremen; B. F. Drakenfeld & Co., 92 cs. from Liverpool; Atlantic Forwarding Co., 11 cs. from Hamburg; Bendix Paper Co., 4 cs. from Hamburg; International Forwarding Co., 9 cs. from Hamburg and 18 cs. Rotterdam; Globe Shipping Co., 30 cs. from Rotterdam and 2 cs. Hamburg; Meadows, Wye & Co., 35 cs. from Rotterdam; Titan Shipping Co., 2 cs. from London; Tamm & Co., 2 cs. from Rotterdam; Brown Bros. & Co., 10 cs. from Hamburg; C. Steiner, 4 cs. from Hamburg; Heemsoth & Basse, 63 bls. from Rotterdam; H. D. Catty & Co., 3 cs. from Rotterdam; F. Murray Hill, Inc., 17 cs. from Bremen; G. W. Sheldon & Co., 11 cs. from Bremen and 8 cs. Rotterdam; Whitfield Paper Works, 66 cs. from Kobe; Miller & Wright Paper Co., 4 cs. from Rotterdam; Hudson Forwarding Co., 2 cs. from Havre; R. J. Fitzsimmons Corp., 15 cs. from Liverpool; Hurley-Johnson Corp., 15 bls. from Liverpool; Blauvelt-Wiley Mfg. Co., 6 cs. from Glasgow; J. J. Shore & Co., 10 cs. from Bremen; American Express Co., 30 cs. from Bremen; Central Union Trust Co., 8 cs. from Hamburg; C. Braun, 14 rolls from Rotterdam; E. M. Sergeant Co., 12 cs. from Gothenburg.

John E. Kelley, who has been connected with the Simonds Saw and Steel Company, Fitchburg, Mass., as general sales manager and secretary, retired December 31st, 1928, after having been associated with that organization for thirty-three years.

Starch—

A SIMPLE change in the manufacturing process often results in a pronounced decrease in cost of production.

Paper Mills use Starch for sizing to produce better and stronger sheets with lower cost of manufacture.

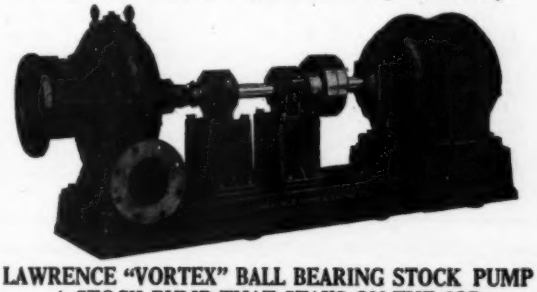
Our SPECIAL PAPER brand for beater-sizing increases strength of sheet and gives improved finish.

Our FOX HEAD brand for top-sizing is more economical than all glue-size.

CORN PRODUCTS REFINING COMPANY
17 Battery Place, New York City

LAWRENCE "VORTEX" CENTRIFUGAL PUMPS

—Built For Every Need in the Paper Industry



LAWRENCE "VORTEX" BALL BEARING STOCK PUMP
A STOCK PUMP THAT STAYS ON THE JOB

Designed by Engineers who have specialized in pulp and paper mill requirements. A STOCK PUMP that will absolutely deliver the "stuff" faster, continuously, and more efficiently, and will not clog.

Rugged construction throughout. Heavy shaft. Oversize heavy duty Ball Bearings guarantee long life with least attention.

Our Engineers are always ready to help you with pumping problems. Write for Bulletins.

Lawrence Pump & Engine Co.
P. O. BOX 70,
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N. Y. Office—90 West St.

Lindsay Spiral Weave Fourdrinier Wires

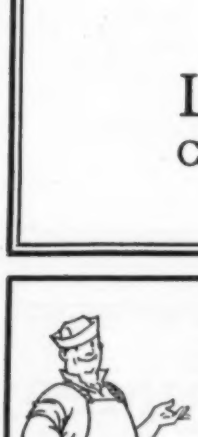
(Patented Oct. 1927)

Represent the latest idea in paper machine wire cloth.

They prevent grooving of Suction Boxes, scoring and filling up of seams. This overcomes the necessity of planing the suction box covers and adds to the life and tonnage of the wires.

Lindsay Wire Weaving Company

Collinwood Station CLEVELAND, OHIO



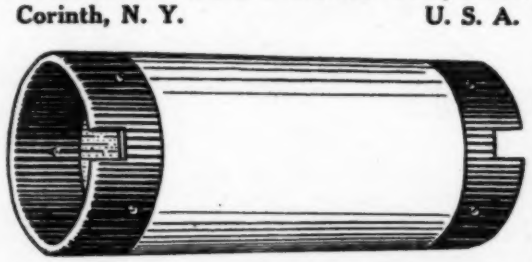
Ham Feltz says:

"Let these wise acres prate all they want. There's but one test for a felt, and that's on the machine. And it's also been my observin' that when you want felts that help to get out the tonnage, that leak like a fish net, and that are tough as life itself, get a Hamilton Felt. I know. The fellows who make them have been doing just that for nigh on to 70 years. And that 'know how' counts big with me."

Hamilton Felts

ELIXMAN PAPER CORE CO., INC.

Corinth, N. Y. U. S. A.



Canadian Elixman Co., Ltd., Hamilton, Ontario

COMBINATION—
Skill and Experience
RESULT—
"Tannite" Deckle Straps

Manufactured by

STOWE & WOODWARD COMPANY

NEWTON UPPER FALLS, MASS., U. S. A.

Market Quotations

(*Continued from page* 1853)

Wm. Whitmer Parsons Pulp & Lumber Cons. 8s	18	22
Waterway Paper Products 6s	101	

STOCKS

American News Company	OW	
American Book Common	130	134
American Sales Book Common	134	
American Sales Book Preferred	132	
Androscoggin Pulp Co. Common	30	
Androscoggin Pulp Co. Preferred	90	
Brown Co. Preferred	95	97
Bryant Paper Co. Common	7	10
Belgo Canadian Paper Co. Preferred	95	97
British Columbia Pulp & Paper Common	5	8
British Columbia Pulp & Paper Pfd.	65	69
Canada Paperboard Co. Preferred	90	94
Champion Fibre Preferred	105	
Champion Coated Paper Co. Pfd.	105	107
Chemical Paper Co. 1st Pfd.	90	
De Jonge (Louis) & Co. Pfd.	95½	96½
Dryden Paper Co. Pfd.	38	41
Diem & Wing Preferred	92	95
Downington Paper Co. Preferred	103	
Downington Paper Co. Common	93	
Eddy Paper Co. Common	30	
Escanaba Paper Co. "B" Preferred	42	
Escanaba Paper Co. Common	3	
Glatfelter Paper Common	101	
Great Northern Paper Co. Common	63	65
Gair (Robt.) Co. Preferred	30	33
Gair (Robt.) Co. Common	10	13
Hawley Paper Co. Preferred	96	
Hammermill Paper Co. Preferred	109	110½
Holyoke Card & Paper Co. Preferred	170	
Hinde & Dauch Paper Co. Pfd.	101	103
Hinde & Dauch Paper Co. Common	25	28
International Pulp Co. Preferred	75	78
International Textbook Co.	17	19
Jessup & Moore Paper 1st Pfd.	27	31
Jessup & Moore Paper Common	4	10
Keyes Fibre Co. Class "A" Common	43	45
Marathon Paper Mills Common	125	
Marathon Paper Mills Pfd.	170	
Mead Pulp & Paper Common	68	72
Minnesota & Ontario Paper Pfd.	68	72
Missisquoi Pulp & Paper Pfd.	90	95
Munising Paper Co. Common	22	25
Munising Paper Co. Pfd.	83	87
Northern Paper Mills	30	32
National Paper & Type Pfd.	75	80
Orono Pulp & Paper Common	40	45
Oglesby Paper Co. Pfd.	101	
Occident Paper Co. Pfd		105
Oxford Paper Co. Pfd.	108	109
Oxford Paper Co. Common	193	
Parker Young Co. Pfd.	87	
Parker Young Co. Common	27	31
Package Paper & Supply Units	25	
Penobscot Chemical & Fibre Common	80	
Robertson Paper Co. Preferred	5	
Robertson Paper Co. Common	50c	
Rogers Paper Co. Common	45	50
River Raisin Paper Co.	7	9
St. Regis Paper Pfd.	106	108
St. Croix Paper Co. Common	168	
Southerland Paper Co.	22	25
Tait Paper & Color Industries Pfd.	OW	90
Tait Paper & Color Industries Common	65	
United Wall Paper Preferred	90	95
United Paperboard Preferred	63	
West Virginia Pulp & Paper Pfd.	100	102
West Virginia Pulp & Paper Common	50	53
West Virginia Timber Preferred	90	94
Westfield River Paper Co. Preferred	85	95

Association to Tell of Its Work

Major O. M. Porter, secretary of the American Paper and Pulp Association, has announced plans whereby the association, through a series of illustrated pamphlets, will tell of its work in the protection and promotion of the paper industry of the United States.

These pamphlets which will cover the history of the association, its present major activities, tariff organization of the industry, its statistical services, and its forestry and waste utilization work. The last pamphlet will give the high lights of the association's fifty-second annual meeting and banquet, which will be held at the Waldorf-Astoria Hotel, New York, Thursday evening, February 21, 1929, and will contain the secretary's annual report.

These pamphlets are expected to present a most interesting story of the association's work. They will be numbered and should be filed for reference in the offices of every pulp and paper mill in the United States.

Speed Production With DAYTONS

Securing a new customer may be a tribute to the salesman, but receiving that customer's repeat order is a compliment to the product itself.

For which reason we announce that approximately 80% of the nearly 400 Dayton High Speed Beaters now "speeding production" in some seventy odd mills represents repeat business—a truly wonderful tribute to this particular product.

Incidentally there are more Daytons in the mills of America and Canada than the entire field of competitive high speed builders can account for—further evidence that the Dayton ACTUALLY DOES dominate.

Entirely new equipment or old type engines reconstructed.
GET THE FACTS.

The Dayton Beater & Hoist Co.,
Dayton, Ohio

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DAYTON HIGH SPEED BEATERS

Morey Paper Mill Supply Co.

Vulcan TRADE MARK

99 CHAUNCY St. BOSTON, MASS.

Sole Selling Agents

"LAMBETH" COTTON TRANSMISSION ROPE
and EGYPTIAN COTTON ROPE FOR SHEAHAN CARRIERS
Careful, Intelligent, Quick Service

BOLTON QUALITY

JOHN W. BOLTON & SONS, INC.

EAGLE KNIFE & BAR WORKS
LAWRENCE, MASS.

The only firm making KNIVES for every machine from wood pile to finishing room.
It's the KNIVES that do the work!

P.P.P. cannot bind the rod

The free-moving wedges in Daniel's P. P. P. Rod Packing, slide into position under pressure, and slip back again as the pressure falls. P. P. P. cannot exert a continuous binding on the rod.

Easy bearing means long service, and permits power transmission free from packing drag.

QUAKER CITY RUBBER COMPANY
WISSINOMING, PHILADELPHIA
Branches: New York Chicago Pittsburgh San Francisco

ROLLWAY
CYLINDRICAL ROLLER BEARINGS

Many Types and Sizes—to meet any load and speed condition most economically

ROLLWAY BEARING CO., INC.
Syracuse, New York

If you are not getting 1500 and more hours from your Glassine Rolls

You should send for the new Butterworth folder which tells facts about Butterworth Long Wear Calender Rolls.
For Glassine—super and coated.

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BUTTERWORTH *Calender* ROLLS

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 34719—Kraft wrapping paper. Johannesburg, South Africa. Agency desired.

No. 34718—Papermaking machines, and metallic wire cloths for Fourdrinier paper machines. Milan, Italy. Agency desired.

No. 34721—Milk bottle caps. Winnipeg, Canada. Agency desired.

No. 34629—Newspapers, overissued. Swatow, China. Purchase desired.

No. 34641—Newspapers, overissued. Amsterdam, Netherlands. Agency desired.

No. 34681—Printing paper. Oporto, Portugal. Agency desired.

No. 34760—Roofing papers. Havana, Cuba. Agency desired.

No. 34720—Wallboard. Prague, Czechoslovakia. Agency desired.

No. 34700—Wall and insulating board. Medan, Sumatra. Agency desired.

No. 34697—Wood pulps, chemical, for paper and rayon industries. Milan, Italy. Agency desired.

No. 34815—Paper bags. Bridgetown, Barbados. Agency desired.

No. 34816—Paper bags. Port of Spain, Trinidad. Agency desired.

No. 34817—Vulcanized fiber. Prague, Czechoslovakia. Agency desired.

No. 34897—Newspapers, overissued. Shanghai, China. Purchase desired.

No. 34778—Paper. Santiago, Colombia. Purchase desired.

No. 34804—Paper manufacturing machinery. Milan, Italy. Agency desired.

No. 34778—Caustic soda and soda ash. Santiago, Colombia. Purchase desired.

No. 35023—Paper bags and cups. Shanghai, China. Purchase desired.

No. 34943—Paper and paper goods. Shanghai, China. Agency desired.

No. 35173—Paper containers, and waxed parchment paper. Wellington, New Zealand. Purchase desired.

No. 35169—Cups, drinking, noncollapsible, not treated. Taihoku, Japan.

No. 35184—Fiber board for manufacture of trunks, etc. Paris, France. Purchase and agency desired.

No. 35170—Newspapers, old. Karachi, India. Agency desired.

No. 35202—Newspapers, overissued. Tientsin, China. Agency and purchase desired.

No. 35189—Newsprint paper. Manila, P. I. Agency desired.

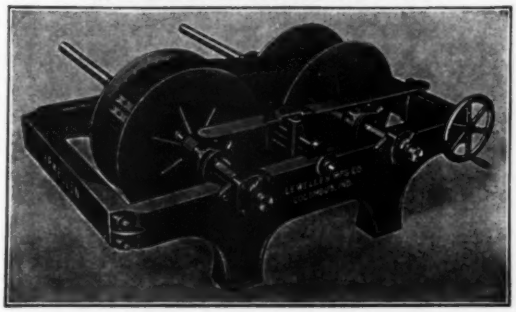
No. 35172—Printing, book binding, and box and envelope making machinery. Milan, Italy. Agency and purchase desired.

No. 35171—Chemical wood pulp. Milan, Italy. Purchase and agency desired.

No. 35123—Felts for paper machines. Helsingfors, Finland. Agency desired.

According to **Kartonnagen- und Papierwaren-Zeitung** of Sept. 21, 1928, p. 817, a group of business men in Stambul, Turkey, in co-operation with domestic banks, are planning the erection of four paper mills considering Constantinople, Brussa, Tschataldja and Kodja Ili the favorable sites in respect to supply of the raw material. First of all will be the production of packing paper since there is an exceptionally large demand for it.

LEWELLEN Variable Speed TRANSMISSION



There is a reason for the enthusiastic boosters of LEWELLEN variable speed transmissions. These owners know the LEWELLEN has made good on their jobs, in many instances after other types and makes of variable speed control had failed.

No matter what the nature of the installation, no matter how difficult the job assigned to it, the LEWELLEN transmission justifies every claim made for it, with a margin of good measure which makes every user, not only satisfied but enthusiastic.

You have to own a LEWELLEN, to appreciate the difference in variable speed transmissions. We invite you to submit your speed control problem to us, and let our engineers show you, by means of detail blueprint, the logical solution to your problem. We shall be glad to do this without any cost to you, and it will not obligate you in any way. Bulletin No. 276 is just now off the press. We have a copy for you, if you will write us.

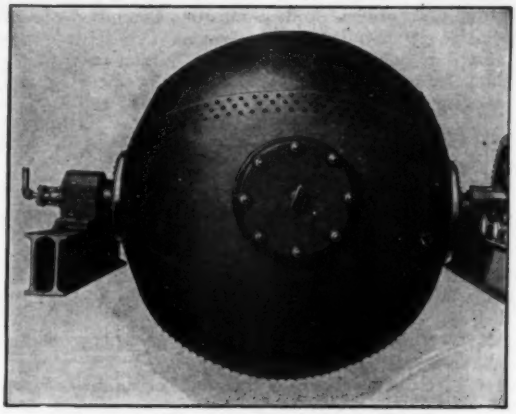
Nine LEWELLEN variable speed transmissions, mounted upon the ceiling in this one department of a large Indiana Manufacturing Plant. Precise control of speeds cuts production cost. (Since publishing this photograph last month, we have had the pleasure of making an additional shipment of LEWELLEN transmissions to this same plant. These repeat orders are the proof of the LEWELLEN efficiency and satisfaction.)

Lewellen Manufacturing Company
COLUMBUS, INDIANA

Cook and Bleach Your Stock Faster, Cleaner, More Efficiently

With the Biggs Rotary Bleaching Boiler you can cook and bleach loose, bulky stock like straw, paper, rags, etc. Equipped on specification with internal steam distributing system, special baffles, strainers and agitators, this apparatus is unexcelled for bleaching and cooking all grades of stock.

Biggs Rotary Cold Bleaching Engines also bleach high consistency stock whiter, stronger and more economically than any other method. Used in conjunction with efficient Biggs Digesters, this latest method of cold bleaching under pressure produces uniform results at a decided saving in power and chemical consumption.



The New Biggs Rotary Bleaching Engine
(Patents Pending)

THE BIGGS BOILER WORKS COMPANY
General Offices and Works
Akron, Ohio

Eastern Sales Office: 300 Madison Avenue, New York City
Chicago Office: 35 South Dearborn Street.

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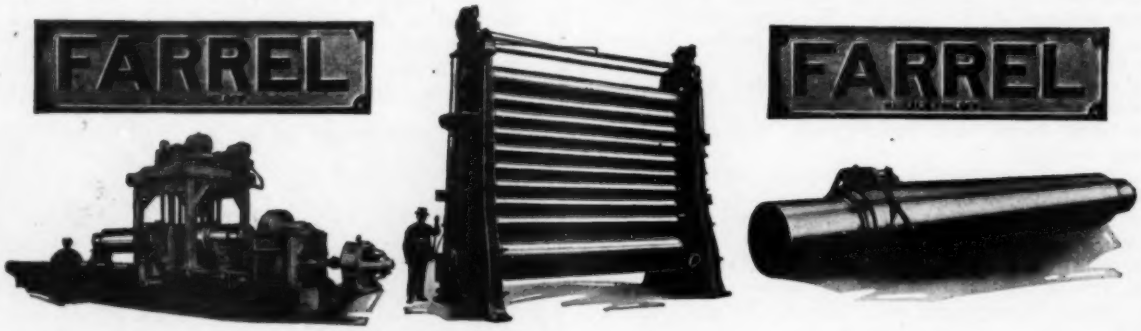
Trade Mark Registered

GLOBE and CYLINDER

ROTARY BLEACHING BOILERS

for Years of Dependable Cooking and Bleaching



FARREL NEW TYPE ROLL GRINDER is electrically driven throughout, and is made in 24", 32", 36" and 42" sizes. All sizes are fitted with Geared Head, New Crowning Device and Automatic Lubrication.

FARREL CALENDERS are equipped with Electric, Hydraulic or Ratchet Lift, all operated from the floor.

FARREL ROLLS are made as large as 298" on the face. Known all over the world.

FARREL INDICATING ROLL CALIPER is extremely accurate. The majority of the parts are made of aluminum alloy, making a light weight instrument. Rolls may be calipered to the end of the face without reversing the caliper.

FARREL-BIRMINGHAM COMPANY INC.

ANSONIA, CONN.

Successor to: { Farrel Foundry & Machine Co., Ansonia, Conn., Est. 1848.
Birmingham Iron Foundry, Derby, Conn., Est. 1836.